UGANDA PROTECTORATE.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE

YEAR ENDED 31ST DECEMBER, 1923.

Published by Command of His Excellency the Governor.

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COMMONWEALTH MYCOLOGICAL INSTITUTE
24 FEB 1964

ENTEBBE,
PRINTED BY THE GOVERNMENT PRINTER, UGANDA.
1924.

4622—600—17-7-1924.

UGANDA PROTECTORATE.

DEPARTMENT OF AGRICULTURE.

		P. O. Box No.	*Telephone No.*
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EXPERIMENTAL STATIONS :—

(1) Kampala.
(2) Kakumiro, Mubende.
(3) Simsa, Soroti.
(4) Fort Portal, Toro.
(5) Kumi, Teso.
(6) Serere, Teso.
(7) Bukalasa, Mengo.

ANNUAL REPORT, 1923.

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Exports.

The following table gives details of exports during the year—comparative tables will be found in Appendix No. 8 :—

		£	*Per cent.*
Cotton	352,184 centals ...	2,026,820 ...	84·674
Coffee	40,932 cwts. ...	108,496 ...	4·533
Ivory	807 „ ...	58,673 ...	2·451
Chillies	18,233 „ ...	58,660 ...	2·451
Cotton seed ...	9,794 tons ..	52,964 ...	2·213
Hides (dry and dry salted)	10,423 cwts. ...	28,855 ...	1·206
Sim-sim	1,435 tons ...	24,383 ...	1·019
Skins (sheep and goats)	314,914 No. ...	14,839 ...	·620
Rubber, raw ...	3,986 centals ...	9,926 ...	·415
Ground nuts ...	175 tons ...	2,714 ...	·114
Hippo teeth	101 cwts ...	1,271 ...	·054
Cacao	399 „ ...	1,079 ...	·045
Horns	15 „ ...	1,033 ...	·044
Jaggree	1,127 „ ...	921 ...	·034
Other Exports ...		3,044 ...	·127
		2,393,678	

Cotton.

In all four provinces there was a very satisfactory increase in acreage sown. Weather conditions during the sowing period of May to August were very favourable, and an excellent start was made. By the end of the year all sowings were well established and a good yield was assured. In the Eastern Province 4,500 tons of seed cotton had been marketed by the end of December. High prices prevailed, and competition was keen. At the commencement of the buying season natives in some areas were obtaining as much as 45 shilling cents per pound for seed cotton. In these first pickings the staple was above average and the colour excellent.

(*a*) *Acreage.*—The approximate acreage planted throughout the Protectorate by the native growers is given below, and for the purpose of comparison the previous year's figures are also shown :—

	1923. *Acres.*	1922. *Acres.*
EASTERN PROVINCE :—		
Teso District	68,000*	83,971
Busoga District	61,300	59,492
Budama District	45,000	
Bugishu District	21,210	72,148
Bugwere District	57,560	
Lango District	45,000	35,008
TOTALS ...	298,070	250,619
*Excluding Bukedea County.		
BUGANDA PROVINCE :—		
Mengo District	70,000	60,000
Entebbe District	16,373	10,000
Masaka District	10,000	10,000
Mubende District	10,866	6,000
TOTALS ...	107,239	86,000
NORTHERN PROVINCE :—		
Gulu District	3,200	4,000
West Nile District	2,500	2,000
Chua District	1,500	1,000
Bunyoro District	3,000	1,500
TOTALS ...	10,200	8,500
WESTERN PROVINCE :—		
Ankole District	2,300	—
Toro District	800	—
TOTALS ...	3,100	—
GRAND TOTALS ...	418,609	345,119

(*b*) *1922—23 Crop.*—As previously mentioned climatic conditions were very erratic. Periods of abnormally heavy rain were followed by unusually hot and dry weather, and the rapid changes seriously affected both yield and quality.

(*c*) *Ginneries.*—The Ginning Inspector, prior to his departure on leave in June, paid 119 visits, involving 80 different ginneries. In his report for the year, he remarks in regard to the handling of cotton at ginneries, as follows:—

"I regret that the improvement which I noted last season has not in all cases been maintained. I particularly allude to the failure to exclude small pieces of "*byai*" and gunny twine from the cotton which is being fed to the gins. There seems small hope of attaining anything like perfection in this whilst quite small children are employed by so many ginners to feed the gins."

The number of ginneries working during the year was as follows:—

	European.	*Indian.*	*Total.*
Eastern Province ...	33 ...	31 ...	64
Buganda Province ...	9 ...	28 ...	37
TOTALS ...	42 ...	59 ...	101

Seven new sites were granted during the year, and one ginnery was transferred from Kampala to the Eastern Province.

(*d*) *Cotton Seed Selection Stations.*—SERERE, SIMSA, AND KUMI—TESO DISTRICT. The shortage of labour early in the year was a severe handicap to progress, and made work on all stations extremely difficult to carry on.

The following are extracts from the Annual Report by Mr. R. G. Harper, Senior Agricultural Officer in charge:—

"METEOROLOGICAL.—Looking at the meteorological charts of records taken at Serere and Simsa farms, the most striking features were the high total rainfall, and the unusually even distribution of the rain throughout the year. September, which is usually a dry month, had a very heavy rainfall, while November was abnormally dry. As regards shade temperatures, the average maximum for July is shown as low as 77, which is probably a record for this part of the country, while the average maximum for the months April to August was under 81, showing that the season was one of the coolest on record."

"TRAINING AND INSTRUCTION.—The following is a list of pupils trained during the year:—

DISTRICT OF ORIGIN.	No. of pupils.	Duration of training.
Kavirondo	10	2 months.
West Nile	5	2 „
do	2	3 „
Lango	4	1 „
do	2	3 „
Kitgum	2	5 „ „

Results of Cotton Crop of Year 1922.

(*a*) *Serere Farm.*—In the report for 1922 it was stated that a diseased condition had manifested itself on the early sown cotton crop, and that later on the late crop likewise became affected. Rains in early February revived the late crop somewhat, but the results from the whole crop were disappointing. The total yield was about 12,000 lbs. from 70 acres, equal to about 175 lbs. per acre.

The Government Mycologist visited Serere on the 8th February on his way to Masindi, to investigate the disease affecting the cotton crop. Some diseased material was collected, which he took away with him for examination in the laboratory, but only negative results were obtained.

Selection Work.—As with the main crop all the experimental plots were affected more or less by disease, which made selection work a matter of great difficulty. However, out of the 3-acre plots No. N17 was outstanding as regards disease resistance, as well as other qualities, and this selection was retained for sowing the main crop the following year.

Of the ten 10-row plots only four were retained after examination *viz.*:—Nos. S4, S7, A2 and A4, the seed from which was sown in 3-acre plots the following year.

A report on the examination of above selections is given on Table I. below.

Of the thirty-one single row plots only fifteen were retained, *viz.*:—Nos. N21 (1, 2, 3, 5, 10, 12), A14 (8, 10), S7 (3, 5, 6), S3 (12, 13, 14, 16).

These were sown in 10-row plots in 1923, and are reported on in Table II. below

Results of Examination of Selection Experiment Plots—Year 1922-23.

TABLE I. 10-ROW PLOTS.

Number.	Length of Staple.	Strength.	Regularity.	Fineness.	Ginning Out-turn.	Remarks.
S4	1¼″	Strong	Regular	Very fine	28·7	Seed small, fuzzy and well covered.
S7	1-3/16″	Very stong	,,	Fine, good lustre.	33·03	,,
A2	1-3/16″	Fine, strong	,,	Fine	33·4	Seed medium, fuzzy, very well covered.
A4	1¼	Strong	,,	Very fine, good lustre.	31·5	Seed small, many naked seeds.

TABLE II.—SINGLE ROW PLOTS.

Number.	Length of Staple.	Strength	Regularity.	Fineness.	Ginning Out-turn.	Remarks.
S (7) 3	1¼″	Fine, strong	Regular	Very fine, silky	27·1	Seed small, fuzzy.
S (7) 5	1¼″	Strong	,,	Fine, soft	29·3	Seed small, green fuzzy.
S (7) 6	1¼″	,,	Fine regular	Fine silky	30·8	Seed small, fuzzy.
S (7) 12	1-3/8″	Very strong	,,	Very fine, silky	29·1	Seed small, fuzzy, a pleasing sample.
S (7) 13	1¼″	Strong	Regular	,,	29·4	Seed small, fuzzy, a nice sample.
S (7) 14	1-5/16″	,,	Fine regular	Fine, lustre good	29·4	Seed small, greenish fuzzy.
S (7) 16	1¼″	Fine, strong	Regular	Fine, silky	28·8	,, ,,
A8	1¼″	Very strong	Very regular	Very fine, silky	30·4	Seed medium, fuzzy.
A10	1¼″	,, ,,	,,	,,	31·1	Seed medium, many naked seeds.
N1	1-3/16″	,, ,,	Regular	Fine, good lustre	33·6	Seed medium, greenish fuzzy.
N2	1-3/16″	,, ,,	Very regular	,,	32·1	Seed small, fuzzy.
N3	1¼″	Fine, strong	,,	,,	30·0	Seed medium, fuzzy.
N5	1¼″	,, ,,	Regular	Fine, very lustrous.	30·6	Seed large, greenish fuzzy.
N10	1¼″	Strong	,,	,,	27·9	Seed very large, fuzzy.
N12	1-5/16″	,,	,,	,,	26·9	Seed medium, many naked seeds.

Individual plants were selected from the main crops at Serere and Simsa totalling 61, of which 31 were retained after examination. These were numbered A14 (1, 2, 3, 4, 5, 8, 10, 12, 13, 15, 16, 17, 18, 19); N21 (1, 2, 5, 9, 10, 11, 12, 14, 17, 19, 20, 22, 24, 25, 31, 36, 38), and sown in single rows in 1923.

(*b*) *Simsa Farm.*—Much better results were obtained from the cotton crop on this farm. The total yield was 11,784 pounds from 40 acres, equal to about 300 pounds per acre, which is about an average crop for this type of soil.

(*c*) *Kumi Farm.*—The cotton crop here yielded about 200 pounds per acre. The plants did not attain to full size, and carried a moderate number of bolls. The quality of the cotton was excellent and gave a higher ginning out-turn than that of the other farms.

The following is a comparative report on the main crops from the three farms:—

Farm.	No. of selection.	Area acres.	Total yield.	Yield per acre.	Ginning out-turn.	Staple.	Remarks.
Serere	A14	70	12,000	171	28·82	1¼″	Medium strength.
Simsa	N21	40	11,784	294	27·66	1 3/16″	Strong.
Kumi	S3	17	3,450	203	30·10	1¼″	Very strong.

The Assistant Agricultural Officer was in charge of the Experimental Station during the absence of the Senior Agricultural Officer on leave, and he reports in reference to the 1923 cotton crop at Serere as follows:—

"The programme of experimental work to be carried out during the season of 1923, as laid down by the Senior Agricultural Officer at the beginning of the year was to have been to the extent of about eighty acres, divided as follows:—fifty acres main crop of the Nyasaland variety, Nos. 17

and 21, and a selection made from Lango, four 3-acre plots, selections from the Allen and Sunflower varieties, six 10-row plots of Nyasaland selections, two 10-row plots of Allen No. 4, and seven similar plots of Sunflower variety, Nos. 3 and 7 (four plots and three respectively) together with thirteen individual rows, selected from the last season's crop both at Serere and Simsa, with the addition of any new varieties that may come along.

In spite of all good intentions early on in the year, the programme of work could not be carried out, due to the very poor supply of labour available during the planting season, so much so, that it was only possible to plant up thirty-nine acres, or under 50 per cent of the acreage allowed for.

During the year eight new American varieties have been introduced under the following names :—Webber's Long Staple Upland, Delfos Acala. (? synonymous N.C. Trown) Special Meade, Durango, Salisbury, Columbia and Delta Type Webber.

These have all been isolated and grown in small plots. Of Egyptian varieties, Assile and Sakel are also being tried for the second season, sheltered by young 'Mvule' trees.

It is quite possible that some of these new varieties may prove useful material for crossing with some of the tried acclimatised varieties, and a start has been made in this direction."

With regard to minor crops, the following yields have been recorded :—

Crop.	*Area.*	*Yield per acre.*
Bulo (small millet)	.... 10 acres	2,250 lbs.
Matama	.... ½ „	3,654 „ 1st crop.
		504 „ 2nd „
Kaffir corn	.... —	3,261 „ 1st „
		118 „ 2nd „
Ground nuts	.... 13 „	370 „ Unshelled.

Throughout the year conditions generally have been unfavourable as far as experimental work was concerned, but notwithstanding this, progress has been made, and systematic selection work has been continued.

Bukalasa—Mengo District. An area of sixty-five acres has been opened up, of which thirty acres are under cotton. Experiments are being carried out with several new varieties of seed, and selection work on a small scale is being proceeded with.

Other crops being dealt with include, coffee, chillies, maize, etc. Arrangements are also being made to train native agricultural instructors and to open a ploughing school. When this centre is fully established, it should be of great help in furthering the interests of native production in Buganda Province.

Coffee.

European Estates.—The year under review has been very satisfactory for the majority of planters. Good crops were generally obtained. The market was very steady for the greater part of the year, and prices showed a decided upward tendency in December.

There are some 170 plantations in the Protectorate, and full details of area, etc., are given in Appendix No. 5.

Exports for the year amounted to 40,932 cwts. valued at £108,496.

The following extracts from a report by the Coffee Officer on his tour in Toro may be of interest :—

"Much of the shade planted in coffee is far from satisfactory, especially some of the imported leguminous trees. The *Albizzia molucana* has proved to be very disappointing, as it does very well for the first four to six years and then dies out. The bark-cloth is receiving much attention by planters, the coffee looked extraordinarily well under it and more steady crops are produced.

More care should be taken when pulping—the breasts on many pulpers were badly adjusted, allowing sound berries to pass through with the pulp.

The washing, fermenting and drying, is on most estates very well done, but the percentage of black and deformed beans could be considerably reduced by the use of washing channels."

Native Cultivation.

Bugishu District.—Good progress has been made in the development of this promising young industry. Two large central nurseries and twelve smaller nurseries were established during the year, and a good supply of plants will be available for extending the existing acreage in 1924. These nurseries are in addition to those put down by the natives themselves.

Between July and October new plots to the extent of forty acres were planted out, bringing the total area up to one hundred and thirty-three acres. There is every prospect of a considerable extension in 1924.

The crop is planted in small plots by individual natives, being purely a native industry, and the following figures give some idea of the distribution.

	Mature Trees.		Planted 1923.	
	No. of plots.	No. of trees.	No. of plots.	No. of trees.
North Bugishu ...	83	28,544	194	16,328
South Bugishu ...	137	34,330	185	11,925
Total ...	220	62,874	379	28,253

Total number of plots ... 599.
Total number of trees ... 91,127.

The second of the small coffee pulping stations was erected at Buwalasi in North Bugishu and was completed in June.

Quantities dealt with at the two stations were as follows:—

Buwalasi ... ... 41,641 pounds cherry
Bubulu ... ... 24,954 „ „

The management and finance of these pulping stations is undertaken by the local Native Council, with advice and assistance from the District Commissioner and local Agricultural Officer.

The growers realised an average price in the open market of 29 shilling cents per pound for parchment, and 36½ shilling cents for hulled coffee.

Other Districts.—In Masaka District (Buganda) 16,060 seedlings of robusta coffee were established in nurseries at two centres, and further nurseries are being prepared.

In Kampala there has been a keen demand by natives for robusta seedlings, and some 46,128 plants were distributed free from the Government Plantation.

Arrangements are being made to open up nurseries in the Western and Northern Provinces, and on the Sese Islands, and good progress is anticipated in 1924.

After a course of instruction on one of the Government Plantations, trained natives are sent out into the districts, to assist native cultivators to establish their small plantations.

In connection with robusta coffee, the following extract from the annual report of the Manager of the Kampala Government Plantation is interesting:—

"*Yields from robusta tree grown under native conditions*—The native robusta tree mentioned in last year's report has been kept under observation and the yields obtained from this tree for the past two years are set out below.

The tree is unpruned and has been allowed to develop naturally:—

Date of Picking.	Weight of cherry.	Weight of parchment.	Per cent of parchment to cherry
	lbs.	lbs.	%
1st:—30th October, 1922	17	4½	25
2nd:—13th November, 1922	15	3	25
3rd:—22nd December, 1922	24	5	25
4th:—4th November, 1923	3	1	33
5th:—15th November, 1923	39	6	15
Total ..	98	19½	—"

Rice.

In the Budama district of the Eastern Province this industry has made rapid strides, and is now well established.

To encourage the growers this Department erected a small rice cleaning plant at Butaleja, in the heart of the rice growing area. This proved to be a great boon to the natives, who obtain very satisfactory prices for the cleaned grain. One of the local commercial firms also installed a small power mill at Nagongera, and a second one is on order. The Departmental mill should thus be available for one of the new areas where encouragement is needed.

The Departmental mill was completed and ready to commence work on August 15th, and between that date and November 10th, fifty-four tons of paddy, producing thirty tons of cleaned rice, had been handled for the native growers.

An attempt was made to establish a small industry in Toro, but owing to the distance from lake ports, and consequent high cost of transport, the scheme was abandoned.

Other Crops.

Chillies.—The area under this crop has been considerably increased, and a big business was done early in the year. Exports amounted to 18,233 cwts, an increase of 6,298 cwts. over the previous year.

Rubber.—Prices remained steady throughout the year, and as a result there was a considerable increase in the quantity exported. Tapping was recommenced on many estates. Exports amounted to 398,600 lbs, as against 124,867 lbs. for the previous year.

Cocoa.—The interest in this crop is now small, and the quantity exported amounted to 399 cwts. only.

Sugar.—At the end of the year, the large sugar refining factory in Kyagwe (Buganda) was nearing completion, and should be ready for working in 1924. Other smaller plants turned out large quantities of jaggree, and exports amounted to 1,127 cwts.

A number of natives were trained in the manufacture of Muscovado Sugar, on the Government Plantation, Kampala. The Manager of this Plantation in his report for 1923 gives the following figures of sugar yields:—

Muscovado Sugar Yields.

Variety.	Date planted.	No. of canes.	Weight of canes.	Juice extracted.		Muscovado Sugar.					
				Amount.	Per cent to weight of cane.	Total.	Per cent to weight of cane.	1st Quality.		2nd Quality.	
									%		%
	1921.		lbs.	lbs.		lbs.		lbs.		lbs.	
D. 74 ...	January ...	634	2,700	1,600	59·25	274	10·15	117	42·07	157	57·03
Uba Cane ...	do ...	3,141	8,958	4,971	55·47	825	9·21	218½	26·54	606½	73·46
D. 131 P. ...	do ...	438	1,800	1,067	59·27	176½	9·83	86½	49·15	90	50·85
Java Cane ...	do ...	356	2,400	1,425	59·37	237	9·88	104	43·88	133	56·12
Ceylon Cane ...	May ...	964	4,200	2,486	59·19	414	9·86	203	49·00	211	51·00
4596 ...	do ...	2,194	8,100	4,783	59·04	797	9·84	375½	47·17	421½	52·83
3922 ..	do ...	1,671	5,400	3,198	59·22	537	9·94	247	46·00	290	54·00
Sealys Seedling ...	do ...	2,198	7,500	4,442	59·23	750	10·00	165	22·00	585	78·00

Tea.—There has been an increasing interest shown in this crop, and applications for seed both by Europeans and natives have been numerous. For the better qualities of prepared tea the demand exceeds the supply, and other qualities find a ready sale amongst the natives. Experiments conducted on the Government Plantation in Kampala show that it takes approximately five pounds of freshly gathered leaves to produce one pound of prepared tea. On the Kakumiro Plantation, one-fifth of an acre yielded sixty-four lbs. of prepared tea during the year.

Tobacco.—Experiments were continued on the experimental station in Teso, and approximately two acres of land were devoted to this crop. Several varieties were planted, and in the earlier stages some damage was done by very heavy rains, but at the end of the year the crop promised well.

Wheat.—Work was continued at the experimental stations in Toro and Mubende districts, and six varieties were under trial, including those imported from Kenya. Some 150 plots were also cultivated by natives on the Butoroga hills in Mubende

district, and these were visited periodically by the officer in charge, who gave instruction in cultivation, and preparation of the grain for market. The yield varied from six hundred to eight hundred pounds per acre.

Siroko Valley Development.

This scheme was commenced during 1921, when three Austin tractors and full ploughing equipment were presented by the Empire Cotton Growing Corporation. A good start was made in 1922, but the work was temporarily closed down in March and was not re-commenced until January of the year under review.

At the commencement the object of the scheme was to encourage natives from the surrounding hills, who previously had no "money crop", to take up allotments in the fertile but uninhabited Siroko valley, for the purpose of growing cotton, and other crops in rotation.

Although at the beginning some difficulties and native prejudices had to be overcome, it may now be safely said that the scheme is proving a success. A total area of six hundred and sixty-five acres has been ploughed and harrowed on the south side of the river, and this land has been distributed in half acre blocks to the hill dwellers. Work has also been commenced at a new site north of the river nearer to the foot-hills, and further development can be looked for in 1924.

A private firm has erected a power ginnery near to the original site, and this should do much to stimulate production as the growers will have a ready market on the spot.

The following extract from the annual report of the officer in charge is of interest:—

> "In addition to the land actually prepared by the Department, there has been a considerable increase in cotton planting in the vicinity, which is due largely to our activities."

Native Ploughing.

Considerable progress has been made in the use of ploughs by natives, more especially in the Teso and Lango districts of the Eastern Province.

In referring to the Teso district, the Ploughing Instructor writes:—

> "During the year ploughing in this district has advanced considerably, both in regard to the number of ploughs now in use, and interest taken by the natives. They now seem to realise the benefits which they obtain from the use of ploughs, and the demand at the present time is very keen. The plough used is the Ransome E.C., which has been found to be most suitable, and can be bought at a fairly low figure. It is of course in many cases outside the peasant's financial limits, but it has been tried, with success in some parts, for several of the poorer people to pool their money and buy one plough amongst them.
>
> During the year one firm in Soroti has sold 330 ploughs.
>
> The keen interest taken in ploughing by the people was well shown on the occasion of a native ploughing match held at Soroti Agricultural Show in September, where there was a fine turn-out of competitors, and some very good work was done."

Owing to good prices realised from the sale of cotton early in the year, money was plentiful, and the demand for ploughs and tackle exceeded the supply. Consignments of ploughs due to arrive late in the year were bespoken months ahead.

New ploughing schools have been established in Budama, Bugwere, and Bugishu districts, and other parts of the Eastern Province. The number of cattle received, trained, and passed back to the owners during the year, reached a total of approximately 620. In addition some 250 natives were trained as ploughmen.

The extension of ploughing in suitable areas of the Buganda Province is now receiving serious consideration, and plans are in hand for the opening of ploughing schools early in 1924.

Agricultural Shows.

Three very successful shows were held during the year. Two of these were district shows in the Eastern Province, organised mainly for the purpose of stimulating native interest in local agriculture and production. Entries were confined to natives of the districts concerned, and, although new to the idea, much enthusiasm was shown and competition was keen.

The Kampala Show was on a larger scale, and in addition to classes confined to natives of Buganda Kingdom, there were several open classes which attracted a considerable number of entries from European planters and others.

At Tororo Show (Budama district) a demonstration in the correct methods of dressing and drying hides for the market, led to the establishment of dressing and drying stations in each county of the district. The excellent exhibit of agricultural implements by a local firm resulted in a brisk trade in ploughs.

The outstanding feature at the Soroti Show (Teso district) was the very creditable show of ploughing, which included demonstrations in tractor ploughing by a local firm, and a keenly contested competition for local natives with ox-drawn ploughs.

Further district Shows will be held during 1924.

British Empire Exhibition.

A local Committee was formed to make the necessary arrangements for this country's participation in the Exhibition. The majority of the exhibits were on view at the Kampala Agricultural Show, and created much interest. Considerable time and care was necessary to enable the exhibits to be made as representative as possible, and the collection of produce will no doubt do much to enlighten those interested, as to the possibilities of this Protectorate coming more to the fore in the supply of raw products for the home markets.

The whole of the work of collecting and organising the exhibits was undertaken by this Department, and in this connection, the Government Botanist, Mr. Maitland, deserves special mention for the interest and untiring energy displayed by him. He was also responsible for the packing and despatch to England of 160 cases and packages in which the exhibits were contained.

Government Plantations.

The following list contains particulars of plants and seeds distributed during the year:—

PLANTATION.	PLANTS.		SEEDS.	
	Economic.	Decorative.	Economic.	Decorative.
Entebbe	Various 5,384	Various 8,059	Various 96 pkts.	Various 223 pkts.
	Coffee 13,500	—	—	—
Kampala	Coffee 46,128	—	Tea 6,556 seeds	Various 7 pkts.
	Tea 20	—	Coffee 71 lbs.	—
	Various 3,366	—	Rice, etc. 440 lbs.	—
Serere	Various 595	—	Various 7 pkts.	—
Kakumiro	Various 256	Various 1,671	—	—
Fort Portal	Various 544	—	—	—
TOTAL ...	69,793	9,730		230 pkts.

The Botanic Gardens, Entebbe.—In his annual report for 1923 the Manager writes:—

"As far as rainfall is concerned the weather has been exceptional. At Entebbe the total fall exceeded any previous record by 19·19″ and these records go back as far as 1896.

In May the rainfall was 24·80″, the highest ever recorded for any one month in the whole of the Protectorate. The previous record for Uganda was in October, 1917, when 21·12″ fell at Hoima.

Previous records for the distribution of plants and seeds have been greatly exceeded. There was a greater demand for decorative plants. During April when there was a free distribution of fruit trees and seeds, 3,406 of the former and 39 packets of the latter were sent out.

The figure for economic plants includes 13,500 seedlings of coffea robusta distributed free to natives on the Sese Islands.

Numerous consignments of seeds have been received from various sources, and thanks are accorded to the following donors:—

The Director, Royal Botanic Gardens, Kew.
The Director, Royal Botanic Gardens, Edinburgh.
The Director, Horticultural Section, Ministry of Agriculture, Giza, Egypt.
The Director, Botanic Garden, Buitenzorg, Java.
The Director of Agriculture, Tanganyika.
The Director of Agriculture, Trinidad.
The Director, Botanic Gardens, Brooklyn, U.S.A.
The Curator, Botanic Gardens, Cambridge, England.
The Curator, Botanic Gardens, British Guiana.
The University of Manitoba.
Lady Hanbury, La Mortola, Ventimiglia, Italy.
C. H. Lankester, Esq., Costa Rica."

The Botanic Gardens contain the oldest Cacao in the country—one plot being planted as far back as 1901—Plot No. 1. Plot No. 2 contains plantings of a somewhat later date, whilst Plot No. 3 was planted 1907. The following tables show the yields:—

Cacao.

VALUE OF TREES IN EACH PLOT IN POD PRODUCTION AND TOTAL YIELDS, 1923.

Plot.	Number of Trees which gave a yield of: Pods Nil.	Pods under 5	Pods 5 to 10	Pods 11 to 25	Pods 26 to 50	Pods 51 to 100	Pods 101 to 200	Pods 201 to 300	Pods over 301	Total No. of trees.	Total yield of pods.	Average No. of pods per tree.	Total yield dry Cocoa beans.	Average yield dry Cocoa beans per tree.	Distance of planting.	Yield per acre.
													lbs.	lbs.		
I.	6	3	2	5	7	12	7	1	2	45	3,232	71·8	181	4	18′ × 18′	536
II.	2	1	1	5	3	9	5	—	—	26	1,375	52·8	66¾	2·57	18′ × 18′	344
III.	6	8	10	18	13	15	4	—	—	74	2,390	32·4	133½	1·8	15′ × 15′	348

INDIVIDUAL RECORDS FROM APRIL, 1923.—SELECTED TREES.

Plot.	No. of trees.	No. of pods.	Weight of pod.	Average weight of pod.	Dry Cocoa Beans: Total yield.	No. of pods to 1 lb.	% of total weight of pods.	Total pod production since 1917	Average yield of pods per year.	Remarks.
I	7	87	61·50 lbs.	·7 lbs.	6·00 lbs.	14·5	9·7%	1,160	165	Calabacillo, yellow variety
	9	90	43·00 ,,	·47 ,,	3·75 ,,	24·0	8·2%	748	107	Calabacillo, red variety
	22	314	132·50 ,,	·42 ,,	16·75 ,,	18·1	12·6%	1,617	231	Calabacillo, yellow variety
	82	294	169·75 ,,	·57 ,,	10·25 ,,	28·6	9·0%	1,103	157	Calabacillo, red variety
II.	50	105	46·50 lbs.	·44 lbs.	2·75 lbs.	38·1	5·9%	591	84	Forastero, red variety
	55	104	67·00 ,,	·64 ,,	5·25 ,,	19·8	7·8%	386	55	Calabacillo, red variety
	67	99	68·50 ,,	·69 ,,	4·00 ,,	24·7	5·8%	748	107	Calabacillo, yellow variety
III.	1	32	18·50 lbs.	·57 lbs.	2·00 lbs.	16·0	10·8%	78		Calabacillo, red variety
	4	166	135·25 ,,	·81 ,,	12·25 ,,	13·5	9·0%	296		Forastero, red variety
	34	30	37·00 ,,	1·23 ,,	2·50 ,,	12·0	6·7%	133		Forastero, yellow variety
	41	91	69·50 ,,	·76 ,,	6·00 ,,	15·1	8·6%	182		Forastero, yellow variety

The Para rubber was rested during the year and no tapping was carried on.

Kampala Plantation.—The Manager reports as follows:—

"The work of selection amongst the robusta type of coffees has been continued, and only selected plants and seeds have been sent out during the year.

Experiments with hybridization amongst the different types of coffees have been carried out.

Four touring native Agricultural Instructors have been at work during the year. Efforts have been made to interest natives in coffee cultivation, and the demand for coffee seedlings shows that this branch of the work is having good results."

Kakumiro Plantation.—With reference to coffee the Manager remarks as follows:—

"The year was a very favourable one for coffee generally, but the yield from most of the plots was small, owing, in the case of some plots, to over-cropping the previous year, and in other cases to considerable numbers of the trees having been stumped early in the year.

In June, Plot No. 5—the 1904 plot—which was stumped during the latter part of 1922, was divided into three sub-plots for the purpose of comparative experiments in the various pruning methods. One sub-plot is being trained on the Costa Rican or multiple stem system; one on the Guatemalan or "Agobiada" system whilst the other is being retained on the Uganda or single stem system. At present the Costa Rican method appears the most promising. The whole plot has been planted up with *Terminalia Belerica*, spacing 40 ft. x 40 ft., as a permanent shade, and also with *Sesbania aegyptica* as a temporary shade. The former tree is a new introduction to this country.

This plot is of great interest as showing the longevity of the coffee tree in Uganda under favourable conditions and good cultivation. Although twenty years old, the trees have been rejuvenated by means of stumping, and next season will again be in bearing."

The undermentioned extracts are also of interest:—

"*Quinine.*—In March a half acre plot was planted with *Cinchona* sp.—Most of the plants are now well established, and the growth has been very satisfactory.

"*Coffee Shade Trees.*—Mention must be made of *Erythrina velutina*, which tree is, at Kakumiro, the ideal coffee shade tree. Most of the trees are now nine years old; they are planted 40 ft. x 40 ft., and the branches meet, thus forming a perfect shade. Unlike most species of *Erythrina*, it is never defoliated, though, nevertheless, it provides a constant rich mulch of dead leaves. Planters are becoming keenly interested in this tree and the demand for seeds is great."

Minor Crops.—The following yields are recorded:—

Crop.	Date planted.	Date harvested.	Yield per acre.
Maize, Hickory King	March	September ...	1,800 lbs.
,, Ladysmith, white ...	,, ...	,, ...	1,750 ,,
,, Salisbury, white	April	,, ...	1,360 ,,
,, Yellow hogan	,, ...	October ...	1,850 ,,
,, Potchefstroom pearl ...	March	September ...	1,600 ,,
Ground nuts	April	October ...	1,192 ,,
Flax	May	September ..	184 ,, (seed) 1,144 lbs. (straw)
Soya Beans, Manchu	,, ...	,, ...	280 ,,
,, Wilsonfine	,, ...	,, ...	60 ,,
,, Tokio	,, ...	,, ...	200 ,,
,, Black eyebrow ...	,, ...	,, ...	280 ,,
Buckwheat	June	,, ...	840 ,,

Agricultural Statistics and Meteorological Returns.

Full details will be found included in the appendices at the end of this report.

Mycological and Entomological.

The reports of the Mycologist, Entomologist and Assistant Entomologist are enclosed, the latter being entirely confined to work on *Antestia lineaticolis, Stal.*

Staff.

The continual expansion of the work of the Department inevitably adds to the duties of the Staff, and I desire to record my appreciation for the services rendered by all during the year.

L. HEWETT,
Acting Director of Agriculture.

ANNUAL REPORT
OF
THE GOVERNMENT MYCOLOGIST.

1. I left Kampala for home leave on April 10th and resumed duty on my return on December 4th. I have thus been absent from the country for practically two-thirds of the year under review, and on that account there falls to be recorded much less work than usual.

2. To the Directors of the Imperial Bureau of Mycology and the Royal Botanic Gardens, Kew, I wish to express my thanks for identifications of fungi during the year, and I also wish to thank the former for helpful answers to queries and for laboratory facilities granted me at the Bureau during my leave.

3. The tour of the Sese Islands mentioned in last year's report extended into January. 1923, and in February I visited coffee estates and cotton plots in the Hoima and Masindi districts.

4. Departmental Circular No. 9 dealing with the local diseases of coffee was published early in the year, and a number of mycological exhibits was prepared for the Kampala Agricultural Show held in November. Exhibits have also been sent to England for the Uganda Court of the East African section of the British Empire Exhibition and for the mycological part of the Tropical Diseases section.

Coffee.

5. The usual leaf, berry and stem diseases of coffee were in evidence during the year, but none required more than the usual attention. In view of the publication of Circular No. 9, it is unnecessary to discuss coffee troubles in detail which would only recapitulate what has been said in the Circular, but it might be mentioned that three small fungi (*Meliola glabra* B. and C. (= *M. aibonitensis* Stevens), *Calonectria* sp., and *Arthrosporium parasiticum* Wint.) were found for the first time causing a sooty mould on leaves and on green stems and berries. It may be incorrect to say that all three fungi caused the sooty mould, for it is likely that the two latter forms were parasitic on the first which is a true sooty mould. The harm done by the attack was negligible, but it is desirable from the point of view of scientific interest to put the occurrence on record. Similarly, a fungus resembling *Rhizoctonia lamellifera*, a new species mentioned below, has been found on a single young coffee (*arabica*) plant which had been attacked by cut-worm. Should the work now in progress prove the fungus to be *Rhiz. lamellifera*, there will have been added to its known hosts a sixth host, and one concerning whose liability to attack by the *Rhizoctonia* a considerable amount of attention has been devoted in the form of infection experiments. Root diseases of coffee were not in evidence during the year.

Hevea.

6. The writer's absence from the country during the period of the general resumption of tapping precludes him from making statements regarding the prevalence or otherwise of diseases due directly or indirectly to the steady withdrawal of latex from the tree, and the first opportunity will therefore be taken to visit rubber estates in tapping and to survey the state of affairs from the mycological point of view. The brown bast experiments mentioned in last year's report have again given inconclusive results, a point which will also be inquired into. No cases of root disease have been reported during 1923.

Cotton.

7. Areolate mildew (*Ramularia areola* Atk.) and boll anthracnose (*Glomerella gossypii* (Southw.) Edg.) have occurred during the year, but neither has yet given cause for anxiety. On the Serere plantation, a dieback of certain shoots has occurred at times and caused a considerable loss of bolls, and the disease, which is probably of physiological origin, may have to be studied in the field next cotton season. No results have been obtained from the laboratory examination in Kampala of material collected at Serere and sent by post.

Sugar Cane.

8. It is hoped that time will be available during 1924 to continue the study of the sugar cane disease mentioned in last year's report.

Other Crops.

9. The host-list of *Armillaria mellea* (Vahl.) Fr., a well-known root fungus, has been extended to include limes, *Cæsalpinia pulcherrima*, *Cassia florida* and *Jacaranda mimosæfolia*, but these records must be regarded as only provisional until the discovery of the sporophores of the fungus actually *in situ*. Chilli dieback (*Vermicularia capsici* Syd.), reported for the first time in 1922

has not been again met with. *Sclerotium rolfsii* Sacc. was found for a second time on carnations and also on young soya beans, but there were present in both cases factors which contributed to the weakness of the attacked plants and so threw doubt on the parasitism of the fungus. The study of the morphology and the behaviour in infection and cross-inoculation experiments of the *Colletotrichum's* referred to in last year's report was carried on, but little time was available for this work. It is hoped to resume it during 1924.

A considerable amount of attention was devoted to the fungus causing the deaths of so many trees of *Grevillea robusta*, used as coffee shade and wind-breaks and as ornamental trees in different parts of Uganda, and an account of its morphology and behaviour in culture has been prepared and will be published in the Transactions of the British Mycological Society. The fungus is a new species and has been named *Rhizoctonia lamellifera*. In the early part of 1923, it was found also to have caused the deaths of *Casuarina equisetifolia*, used as a wind-break for coffee, of tea, of the annatto (*Bixa orellana*), and of *Coffea robusta*, and it is undoubtedly of wide-spread occurrence in Uganda. Attempts made to infect coffee (*arabica*) with *Rhiz. lamellifera* gave negative results, but, should the fungus referred to in paragraph 5 prove to be *Rhiz. lamellifera*, it will have to be regarded as able to attack weakened plants. It has had so many natural opportunities for attacking *arabica* coffee in the field through the proximity of diseased *Grevillea* or *Casuarina* that one is almost justified in regarding the fungus as a weak parasite in so far as coffee is concerned. Further attention will be devoted to this point as opportunity offers.

W. SMALL,

Mycologist.

ANNUAL REPORT

OF

THE GOVERNMENT ENTOMOLOGIST.

During the absence of the Mycologist I attended only to his correspondence, and Mycological work was held over until his return from leave.

Mr. H. Wilkinson was appointed Assistant Entomologist during April and his time has been occupied mainly in connection with the study of the variegated coffee bug. A report by Mr. Wilkinson on this subject is attached.

During the year I visited seventeen estates controlled by non-natives. Numerous plots of food crops and cotton cultivated by natives were also examined.

A few insect pests, not previously recorded as such in Uganda, have made their appearance. Apart from *Antestia lineaticollis* Stal var., no extensive outbreak of insect pests has been recorded.

INSECTS OF ECONOMIC IMPORTANCE DURING THE YEAR, 1923.

On Coffee.

1. *Antestia lineaticollis* Stal var.—Variegated coffee bug.

Short visits were paid to Mubende and Masaka areas during January and March respectively, to investigate the conditions affecting the prevalence of this pest.

Although nothing very definite can be deduced from the observations it would seem that absence of shade and the production of much succulent new growth of coffee trees owing to pruning favoured increase in number of, and damage by, the bug. On an estate which had been uncultivated for many months and the trees allowed to revert partially to forest conditions some three miles from a coffee estate seriously attacked by the bug, none of this pest was seen. A thorough search was made in the forest, scrub, and grass lands of both Masaka and Mubende areas for the wild food-plant of *Antestia* but without positive result.

It seems very doubtful whether pruning is of any assistance in controlling the coffee bug. It is of little use to collect bug eggs only and breed out the parasites as apparently has been done in some instances. A trustworthy native should always be employed inspecting the coffee trees for bug (and other insect pests), and when increase in numbers of the bug is observed an adequate

number of small boys should be engaged solely in the collection of all stages of the bug, the eggs to be retained for the release of parasites when they emerge. There may be difficulties with regard to the labour necessary for insect control, but it is better to be certain of a crop of good quality than to neglect insect pests and pick an apparently larger crop much of which is rendered valueless by insect depredations.

An account of the experiments in progress in connection with *Antestia* is given in the report by the Assistant Entomologist.

A new parasite of the coffee bug has been observed in the Mityana area by a planter to whom we are indebted for material. It is a Tachinid fly the maggot of which lives in the body of the adult bug. Whether the bug is parasitised before reaching adult condition has not yet been determined. The proportion of parasitised bugs among those received was very low—approximately two per cent.

2. *Stephanoderes hampei* Ferr.—Coffee berry-borer.

Generally speaking damage by this pest has been negligible during the year 1923. A few outbreaks were reported or observed early in the year but apparently the main crop of coffee escaped serious damage.

In one instance, where the small early crop was seriously infested by the beetle and it seemed advisable to pick and destroy the berries to prevent wide-spread attack on the later main crop, it was decided to wait and observe the infestation a month later when many of the berries would be ripe. Apparently the delay was justified, the main crop escaping serious injury, and a portion of the small crop was saved.

The study of the parasites of this beetle was resumed in April and it was found that a borer attack was gradually being controlled by the parasite *Prorops nasuta* Waterst., a new species which is larger than that observed to be prevalent during the year 1921. During July a third species of parasite appeared and gradually replaced *Prorops nasuta* Waterst. It proved almost impossible to find unparasitised immature stages of the beetle during the latter half of the year.

The life-history of *P. nasuta* is briefly as follows :—Eggs are laid singly on full grown borer larvæ which are first stung and paralysed by the female parasite. The incubation period is three to four days. The parasite larva feeds externally on its host and after three or four days, when the contents of the larval skin has been exhausted, the parasite spins a delicate white silk cocoon and pupates inside the bored berry. The period from spinning the cocoon to the emergence of the adult parasite is from eighteen to twenty-four days. The pre-oviposition period is approximately twelve days and the maximum number of eggs observed to be laid was nineteen. Parthenogenesis is common, though some females seemed incapable of parthenogenetic reproduction ; in all observed cases the progeny of parthenogenetic females were males as is generally the case among *Hymenoptera*.

The third unnamed species of parasite mentioned above appears to be the most important as a means of control of *Stephanoderes*. This species has not yet been thoroughly studied but the following observations indicate its importance, The adult, unlike the other two species, does not spend part of its life within the coffee berry, but flies about actively laying eggs through the bore-holes on eggs and larvæ of its host in the berry. The egg is very minute and is often found on a group of eight or more beetle eggs all of which the larva consumes when it hatches. If no eggs of the host are available the parasite larva feeds on larvæ or pupæ of the beetle or on the larvæ of the other species of parasites ; there is also evidence of cannibalism. The length of the larval stage of this parasite has not yet been determined but it probably extends over at least twenty days during which time numerous eggs and other immature stages of the host are consumed. Pupation occurs in the berry.

In connection with coffee berry-borer, Mr. Den Doop, an Entomologist from Java, arrived in this country during May and remained until December. His object was to introduce parasites of *S. hampei* into Java. After many difficulties had been overcome Mr. Den Doop succeeded in transporting live material of *Prorops nasuta* Waterst. to its destination.

The life-history of the beetle (*S. hampei*) has been almost completely elucidated and I hope to publish this shortly together with an account of the parasites.

In view of the complex relationship between the beetle and its parasites, and the varied habits of the parasites, further investigation is necessary before satisfactory methods can be advised for employing the parasites in controlling the pest.

3. *Lycidocorus mimeticus* R. & P.—Coffee Capsid bug.

During August an outbreak of this pest (not previously observed by me but reported on a few estates as a minor pest during the years 1916 and 1917) was noticed to be confined to an area of coffee trees heavily shaded by *Grevillea robusta* trees. In view of the fact that more coffee is being grown under shade it was decided to make a study of the pest. The investigation is still in progress.

The damage caused by the bug results in the destruction of young leaves and terminal buds thus stimulating abnormal secondary growth among the branches.

4. *Diarthrothrips coffeæ* Will.—Coffee thrips.

Several attacks of this species were reported during the long dry season.

5. *Pseudococcus citri* Risso.—Coffee root mealy-bug.

Attacks by this pest seem to be restricted to trees in a certain type of soil. Badly planted trees are the more liable to suffer from mealy-bug attack. Soil samples have been obtained but the results of analysis are not yet available.

Experiments have been commenced, using solid soil insecticides; the results of the first series are given below:—

No.	Treatment before application of insecticide.	Insecticide.	Results after 3 months.
1	Roots scraped	Tobacco-soap solution.	Trees appeared healthy; few bugs remaining.
2	do	Naphthalene ...	Trees appeared strong; fresh bug attack commencing. No trace of chemical.
3	Roots not scraped	do	No beneficial effect noticeable.
4	Roots scraped	Proprietary soil insecticide.	Trees in good condition; fresh bug infestation. Chemical still in evidence.
5	Roots not scraped	do	No beneficial effect noticeable.
6	Roots scraped	Paradichlorbenzene	Many trees killed but in such cases root system was poorly developed. Strong smell of chemical in the soil. No living bugs on the roots.
7	Roots not scraped	do ...	Yellowish foliage, but trees vigorous. Mealy-bugs all dead and the rubber-like covering layer black, mealy and completely disorganised.

Note:—The scraping of the roots refers to the removal of the rubber-like layer, often a quarter of an inch thick, which covers the root and the bugs and which is apparently secreted by the insects. No. 1 is the old method of control. It will be seen in No. 7 that scraping of the roots is obviated when paradichlorbenzene is used and that the control is of a more permanent nature.

Further experiments are in progress with paradichlorbenzene to ascertain the minimum efficient dose. The effect of application of slaked lime and powdered limestone is also being tested.

I am indebted to Mr. R. T. Martin for his kind assistance in carrying out these tests.

6. *Metadrepana glauca* Hmp.—Leaf-eating caterpillar.

The usual outbreaks have occurred.

7. *Parasa* sp.—Leaf-eating caterpillar.

Two small outbreaks were observed.

8. *Apate* spp.—Black stem-borer.

A few attacks were reported. Paradichlorbenzene was tested and proved successful as a control of this borer. Crystals of the chemical were inserted in all the bore holes which were then plugged with moist clay.

9. *Dirphya princeps* Jord.—Yellow-headed stem borer.

Only one attack was reported.

10. *Bixadus sierricola* White.—Stem-borer.

No information regarding further outbreaks was received, and it would seem that this potentially serious pest had no special attraction to coffee as a food-plant.

11. "*Cut-worms*" (? species).

Considerable damage was done in one instance to the seedling coffee trees in the nursery. Apparently this pest is encouraged by weeds and bad cultivation.

12 *Zonocerus variegatus* Linn.—Grass-hopper.

Nymphs of this Acridiid were reported as coffee leaf-eaters.

13. ? *Cremastogaster* sp.—Tree-nesting ants.

This unpleasant pest makes its sponge-like nests in coffee, Para, and other trees, and apart from hindering picking of coffee by its attacks on natives, considerable damage is caused by the ants attacking the young leaves. It also attacks the tissue on the tapping surface of Para trees, causing considerable loss of latex through bleeding.

A ring of tanglefoot around the tapping surface prevented damage for a time but the tanglefoot quickly lost its adhesive quality.

Sugar solution poisoned with sodium arsenite did not attract the ants; possibly they prefer material other than sweet substances as food.

14. *Læmophlæus pusillus* Schon.

This Cucugid beetle attacks the beans of over-ripe coffee berries. It has also been found in the fruits of an unidentified wild member of the family *Rubiaceæ*.

15. *Coccus viridis* Green.—Green scale.

A small outbreak, confined to a few trees was reported on native-grown coffee. Pruning and burning of the affected branches was recommended for control.

16. *Isaniris* ? sp. nov.—Leaf-eating weevil.

This pest, recorded for the first time during 1922 has not reappeared in serious numbers.

On Cotton.

1. *Earias insulana* Boisd.—Spiny boll-worm.

The infestation has been general though apparently not of a serious nature.

2. ?*species*—Red boll-worm.

This is a pest not previously recorded as such in Uganda. The body of the caterpillar is red in colour and the head brown; the full-grown larva is approximately five-eighths of an inch long. Pupation occurs in a frail cocoon of white silk within the boll.

Observations during November showed that the boll-worm is apparently of the same pest status as *E. insulana* but the pest has been recorded as yet only from Bugwere and Pallisa counties in the Eastern Province.

3. *Aphis gossypii* Glover.—Cotton aphis.

As usual, this has been one of the most serious pests of cotton. Young plants suffer severely. In the early part of the cotton growing season the parasites and predators of the aphis are comparatively rare despite the fact that the Coccinellids *Chilomenes lunata* Fab. and *C. vicina* Muls, feed on aphis on other plants.

A Hymenopteron parasite which periodically gains control of the aphis has been obtained in large numbers. Maximum parasitisation was approximately 90 per cent. The larva of a Syrphid fly (unnamed) has also been noticed as a predator on cotton aphis.

4. *Acrocercops bifasciata* Wals.—Leaf-miner.

A new pest, the damage due to which is serious only to very young cotton plants, was discovered during April in Kampala. Specimens of this caterpillar were received during August from Singo district and Kakumiro.

5. *Oxycarænus* spp.—Dusky cotton-stainers.

These have not been unusually prevalent.

6. *Dysdercus* spp.—Red cotton-stainers.

Bugs of this genus have been more common than *Oxycarænus*. One specimen was found to be attacked by a red mite.

Dysdercus ? species is recorded on the wild plant *Hibiscus sabdariffa* ("bikyenke").

7. *Arctornis* ? *producta* Walk.—Leaf-eating caterpillar.

From two localities small outbreaks of this caterpillar on cotton were reported. The pest has previously been noted as a common feeder on leaves of *Ricinus communis* (castor-oil; "musogasoga"). Adults bred from these caterpillars on cotton are remarkably small and it would seem that the pest either is a species different from *producta* or is not altogether happy with cotton as a food plant.

A number of parasites comprising two large species of Hymenoptera have been bred from these cotton caterpillars.

8. *Sylepta derogata* F.—Cotton leaf-roller.

Only one small outbreak of this insect has been reported; no previous record of the pest in Uganda has been found. It occurs as a pest of cotton in Nyasaland, West Africa and India. The caterpillar feeds on the leaves, often rolling up the leaf margin which is then tied with silk to produce a shelter in which the pest lives.

9. "Cut-worms."

These caterpillars have been responsible for a small amount of damage.

10. *Brachytrypes membranaceus* Drury.—Cricket.

Many plants have been cut off near the soil by these insects. The insects should be removed from their burrows in the soil and killed.

On Fruit and Fruit Trees.

1. Peach.—(*a*) *Carpophilus dimidiatus* Feb. var. and *C. binotatus* Murr.—Bore into and feed on the ripening fruits.

(*b*) *Megalognatha rufiventris* Baly.—Chrysomelid beetle, attacks the flowers.

2. Loquat.—*Megalognatha rufiventris* Baly.—Attacks the flower buds.

3. Banana.—*Cosmopolites sordidus* Germ.—the banana-root weevil—was reported to be present in large numbers on two areas. Cutting out and destruction of infested stocks and the collection of adult weevils by means of trap stocks was recommended.

4. Mulberry.—*Inesida leprosa* Fab.—A Cerambycid stem-borer—has been responsible for the death of many stems in one locality. This is new as a pest in Uganda. Eggs are laid in slits cut in the bark. The larval stage is the most injurious, the adults apparently living externally to the tree.

5. Mango.—(*a*) *Sternochetus mangiferæ* Fab.—Mango weevil—has been found as a pest for the first time in this country. It is doubtless an introduction and has probably originated in Tanganyika Territory whence a small amount of ripe fruit has been imported periodically. No serious outbreak has been reported; as yet I have found only one weevil.

(*b*) *Ceratitis* ? *flexuosa*—Fruit-fly—many mango fruits have been rendered unwholesome by the maggot of this fly which also lives in rose-apple fruit.

On Vegetables and Miscellaneous Crops.

1. Beans.—*Bruchus obtectus* Say.—Bean Bruchid—attacks ripening beans.

2. Sweet potato.—(*a*) *Acræa* sp.—Leaf-eating caterpillar. (*b*) *Cylas formicarius* F.—Weevil.

3. Vegetable marrow.—*Tridacus bivittatus* Big—Fruit-fly.

4. Pumpkin.—? species of fruit-fly.

5. Cabbage.—(*a*) *Aspidiotus lataniæ* Sign.—Scale insect. This is preyed on by the lady-bird beetle *Chilocorus* sp. (No. 5338).

(*b*) *Plutella maculipennis* Curt.—Leaf-eating caterpillar.

(*c*) *Prodenia litura* Fab.—Leaf-eating caterpillar.

6. Garden peas.—*Phymateus cincta* Fab.—Grass-hopper.

7. Millet.—*Lobesia sitophaga* Meyr. sp. nov.—Caterpillar feeding on the ripening seeds.

8. Rice.—*Gryllotalpa africana* P de B.—Mole-cricket—attacking the roots.

9. Para rubber.—*Aspidiotus gowdeyi* Newst.—Scale insect. The only previous record of this insect was on *Anona* sp.

On Shade and Ornamental Trees.

1. Palms.—*Oryctes monocerus* Oliv.—Rhinoceros beetle.

2. *Albizzia* sp.—*Ceroplasis* ? *ugandæ* Newst.—Scale-insect.

3. *Erythrina* sp.—? *Aspidiotus* sp.—Scale-insect.

4. *Sesbania ægyptica*—(*a*) *Mesoplatys ochroptera* Stal.—A leaf-eating Chrysomelid beetle.

(*b*) ? *Chionaspis* sp.—Scale-insect.

Locusts.

No damage by swarms of locusts has been reported but I observed a small swarm of *Faureia* sp. nov. travelling in a northerly direction across the Kampala—Mubende road at mile 60 on January 4th.

Mulberry Silk.

I have not yet received the report on the reeling trials arranged by the Imperial Institute Advisory Committee on silk production in connection with the nine pound sample of cocoons sent to London in April, 1922. A hank of silk reeled from these cocoons has reached me and it appears to be of good quality.

The eggs laid in December, 1922, by selected moths did not commence to hatch until August, 1923, and for some weeks only a few silk-worms were hatched per day. Eggs of the next brood were obtained in October and because they did not hatch within a month of being laid I arranged with the local ice factory to hibernate a quantity of eggs in the cold chamber of the ice store-box.

A portion of these eggs was removed from the cold chamber after five weeks hibernation. At the time of writing no eggs have hatched and it appears that subjection to cold conditions for a longer period will be necessary to expedite and to produce regular hatching of the eggs.

After a delay of many months I succeeded in communicating with the Director of Agriculture in Madagascar with a view to obtaining eggs of the palyvoltine race of *Bombyx mori*.

In consideration of the fact that it is not practicable to send eggs by ordinary means from Madagascar to reach Kampala before they hatch, the Director of Agriculture has very kindly offered to send me a number of the best selected cocoons. Moths from these cocoons will emerge and lay eggs *en route* but the eggs should not hatch until some days after their arrival in Uganda. By this method there is, of course, danger of importing the silk-worm disease, "pebrine", but in view of the probability that the disease was introduced with the eggs which are now being experimented with, I consider that there is no great danger of such further introduction.

If the Madagascar polyvoltine race of silk-worms is established here successfully it seems feasible that within a year arrangements may be made for Missionaries and other responsible persons to commence large scale rearing of silk-worms. In the meantime the study of the effects of cold storage on the old race of eggs will be continued.

Anaphe infracta Walsm.—The African Wild Silk-worm.

The sample of silk nests forwarded during 1919 to the Imperial Institute, London, is still undergoing practical trials by silk spinners in England and it is not yet certain that the English silk spinners will buy the *Anaphe* silk nests. Thus, collection or production of the nests cannot fairly be encouraged. In any case the nests would have to be cleaned of all the individual cocoons and the twigs and other debris before packed for shipment.

In 1914 the expenses of cleaning, packing and shipping the silk to Europe amounted to rupee cents 12 per pound of silk; at the present time these expenses would probably amount to shilling cents 25.

The English silk spinners would require a certain amount to be supplied regularly at a limited price landed in England before they could undertake manufacture of the silk. To obtain some idea of the price and the volume of the supplies of nests, a circular was sent to District Commissioners in the Protectorate and to the District Political Officer, Bukoba. Although no definite idea could be gleaned from the replies regarding the numbers of nests likely to be collected or the price which would be demanded for them, it would seem that Busoga, Bunyoro, Mubende, Sese and Mengo areas and Bukoba district in Tanganyika Territory, would produce annually at least 40 tons of silk if a suitable price were offered to the natives.

Kampala Agricultural Show.

A large number of exhibits of insects of economic and general interest were prepared for the show held during November.

British Empire Exhibition.

Twenty hanging cases, containing approximately two hundred species of insects with numerous immature stages and seven species of ticks, have been sent to the exhibition. The insects were grouped under the following headings:—Injurious to:—coffee; cotton; maize; sweet potato; fruit and fruit trees; miscellaneous crops; shade and ornamental plants; stored products; and household goods. Insects directly beneficial to man, comprising silk-worms of *Anaphe infracta* and *Bombyx mori*. Insects indirectly beneficial to man (parasites and predators). Insects and ticks which transmit diseases to man and domestic animals. Blood-sucking flies. Insects of general interest. Examples of butterflies showing sexual dimorphism. Examples of butterflies and of moths.

Uganda Planters' Association Conference.

At the invitation of the Association I gave an account of my impressions of economic entomology in the United States.

Insects and other Animals received for Identification.

Diptera including *Glossina* spp., *Tabanidæ*, and other flies; and cattle ticks, from the Veterinary Department.

Lepidoptera from Mr. Hunt.

Cotton insects from The Director of Agriculture; Assistant Agricultural Officer, Bukalasa; Administrative Officer, Mbarara; Administrative Officer, Mbale, and Assistant Agricultural Officer, Serere; several species of insects from Mr. G. T. Philpott from Kakumiro; four species of insects from Assistant Agricultural Officer, Kakumiro.

Coccidæ from Chief Forestry Officer.

One snake caught in Kampala.

Mosquitos from District Medical Officer, Mbale.

Specimens received for the Collection.

I am indebted to the Principal Medical Officer for a number of named rats and two species of lice *ex* rats; to the Chief Veterinary Officer for biting flies and ticks; to the Chief Forestry Officer for one species of *Coccidæ*; and to Mr. D. N. Stafford for 15 species of insects and Myriapoda.

The Reference Collection.

No special collecting has been done but such opportunities as have presented themselves have been taken advantage of for the collection of insects. In this way a number of species new to the collection have been added to it and new localities recorded for known species. The spirit collection of immature stages of the various insect orders has been augmented.

I am greatly indebted to the following Entomologists for their kind assistance in identification of numerous species of insects:—Dr. G. A. K. Marshall, Dr. B. Uvarov, Lieut. Col. W. Sampson, the Hon'ble N. C. Rothschild, Mr. G. E. Bryant, Mr. N. D. Riley, Mr. F. W. Edwards, Mr. K. G. Blair, Dr. G. D. H. Carpenter, Dr. H. G. Dyar (U. S. A.), Mr. J. R. Malloch (U.S.A.), G. Lallemand (France), A. Knisch, W. Horn, and R. Kleine (Germany).

Entomological Outfits.

Several of these have been issued on loan to the Rev. H. M. Grace for use in connection with the Schools' Guild work.

The Mackie Entomological Cup Competition.

On December 5th, I judged the collections made by the various schools in connection with the above competition. A general improvement in the pinning of insects and a large increase in interest was very evident in comparison with the previous (first) display in 1921.

Kampala Museum.

The charge of the Museum was handed over to the Botanist on February 2nd.

Plant Imports.

A total of ninety-seven consignments of plants chiefly in postal packets originating from countries as shown below have been examined during the year:—

United Kingdom	28
South Africa	20
India	16
France	7
Holland	7
Tanganyika Territory	5
United States	3
Japan	2
Kenya	2
Costa Rica	2
Ceylon	1
Australia	1
Gold Coast	1
Egypt	1
Italy	1
TOTAL	97

The following species of insects were intercepted in seeds imported from Tanganyika Territory:—*Carpophilus humeralis* L., *Typhæa stercorea* L., *Alphitolius piceus* Ol., and *Sternochetus mangiferæ* Fab.

H. HARGREAVES,

Entomologist.

ANNUAL REPORT

OF

THE ASSISTANT GOVERNMENT ENTOMOLOGIST.

1. Duty was commenced on the 16th April, 1923 and since that time I have been almost entirely confined to work upon *Antestia lineaticolis*, Stal.

While investigating this pest 74 days have been spent away from head-quarters, 1,120 miles travelled by motor cycle, 25 European coffee estates visited in the Masindi—Hoima district, 15 in the Masaka district and in addition much native grown coffee has been inspected in the latter district. In all experiments which have been conducted no details are given in this report since they are not completed but are being continued. Experiments were commenced to determine the life-history of the coffee bug and below will be found a summary of the results obtained together with a comparison of similar stages as contained in Bulletin No. 1, Division of Entomology, entitled, The Coffee Bug by T. J. Anderson, M.A., B.Sc., Entomologist, Kenya Colony:—

Uganda.	Days.	Kenya Colony.	Days.
Average length of egg stage			
October to November	6·3	January to April ...	8
		June to October ...	14
Average length of life of Nymphal stage			
September to November	60·4	July to December ...	115
November to January	49·2	September to March ...	75
Average length of life of Adult	56·0	... ...	131
,, ,, ...	50·75	... ...	106
Average No. of days from Adult to first egg ...	12·5	... ...	19
Average No of eggs per	98	... .	126
Average interval between egg laying	3·6	... .	5
Average total length of life	116 105	... ...	246 206

2. It will be seen that under the conditions of the experiments the life history in Uganda is practically twice as rapid as in Kenya and yet in that short time the average female coffee bug in Uganda lays 78 per cent of the total number of eggs laid by the average female in the latter country. Therefore, other things being equal, this pest should be much more serious here than in Kenya and from observations made by me in the two countries there is no doubt that this is so. When commencing this work specimens of *Antestia* parasitised by a new parasite were kindly forwarded by a planter from the Mityana district. On investigation it was found that out of 1,277 specimens examined only 23 were parasitised. This is equivalent to 1·8 per cent. At what stage in the development of *Antestia* that parasitisation takes place is not yet known but the larva when about to pupate emerges from the rear end of the adult bug causing its death. The pupal stage is probably spent in the soil.

3. Owing to the very low percentage of parasitisation further work has not been undertaken However, investigations will be continued should one find time enough while pursuing what appear to be more fruitful lines of research.

4. In considering the question of control of *Antestia* the way in which the insects behave on the bushes when disturbed affords indications of the results which might be expected from the application of insecticides. The planters know only too well that both nymphs and adults immediately take shelter under a leaf, or at the nodes where leaves or branches emerge from the shoots, or hide among the clusters of berries, or they run down the branches towards the main stem and take cover towards the centre of the bush. If further disturbed the adults generally fall to the ground, or when about 12 inches from the ground they fly actively away to a bush in the near vicinity. Also, all stages of the insect can be found on almost any day of the year due to overlapping of generations and this means that any spray, to be effective, must deal with all stages at the same time. A further phenomenon which mitigates against complete success with spray fluids is the extraordinary degree of resistance to attack by these fluids shown by the insect. This appears to be due to the fact that the insecticide is not able to enter the respiratory tubes before the insect has cleaned it all off. Even when the bugs have been observed to be covered with a strong spray fluid they have merely stood up and flapped their wings, rubbed their bodies with their legs and then run along the branches and settled down towards the centre of the bush as if nothing more than a shower of rain had disturbed them.

5. In addition it may be stated that it is my opinion that large scales spraying is an utterly impracticable proposition owing to shortage of labour and a sufficiently good water supply in many instances. This being so work has not been continued on these lines.

6. In view of the remarkable experimental results obtained in India in protecting tea bushes from mosquito blight by injections of potash and owing to the fact that on analyses of coffee berries being made it was found according to Rudolph D. Anstead that the percentage amount of potash increases gradually throughout the period of growth and knowing that the coffee bug prefers young berries experiments were commenced to determine if an increase of the potash content in coffee would have a similar deterrent effect upon *Antestia*.

7. Branches of coffee were grown in nutrient solutions and the ratio of potash to phosphorus varied from 1 : 1 to 6 : 1. On these branches bugs were placed and observations made daily. Though the results of these preliminary experiments are not very constant there seems to be an indication that after the third day some change has taken place and that a solution containing a ratio of potash to phosphorous as 4 : 1 or more renders the sap distasteful to *Antestia* and experiments are being continued until some definite conclusion can be arrived at. Preliminary experiments have also been conducted on a private plantation by applying cotton seed ash, which contains about 23 per cent of potash, at the rate of about 4 cwts. to the acre. According to reports from this estate there appears to be no difference between the manured and unmanured plots.

8. Soil samples have also been taken from various estates from portions where *Antestia* is prevalent and from portions where *Antestia* is seldom, if ever, seen. These are being sent to the Imperial Institute for analysis and naturally one awaits with interest the results of these analyses.

9. Since the severity with which any particular estate is attacked may vary from year to year it becomes evident that the effect of climatic conditions needs investigation.

10. Now there are two points of view from which effect of climate may be considered: (1) that of direct effect of climatic conditions on the insect itself; (2) the indirect effect of climate by its influence upon the soil and the bush. Since these influences are at work in both directions at the same time it is almost impossible to discriminate between the direct and indirect effects, but there seems to be every indication that the indirect effect of climate acting through the soil and producing corresponding relations in the bush, which again result favourably or otherwise as regards the insect, is of much greater importance than any direct effect of climate acting through the soil and producing corresponding relations in the bush, which again result favourably or otherwise as regards the insect, is of much greater importance than any direct influence it may have on the insects themselves.

11. The most convincing observation in favour of this belief is that the bug can be found on many estates and also in districts where it does little damage and yet is always present. In those districts *Antestia* has never been found on many estates as will be seen from the following in reply to a circular letter addressed to all Coffee Planters in Uganda.

12. Beyond mile 123 on the Toro road *Antestia* has never been seen so far as one knows and therefore the replies from Toro are not tabulated below :—

13. Out of twenty replies from all other districts two stated *Antestia* had never been known to be present, six stated *Antestia* was present but no bad attack known to have occurred. Twelve stated *Antestia* was a pest of greater or less severity from time to time. The time of attack varying according to the district.

14. Thus a study of the rainfall, maximum and minimum temperatures, distribution of rain throughout the year and the degree of wetness has been made for eight stations. Kampala, Fort Portal (Toro), Masindi, Hoima river, Kivuvu, Bwavu, Masaka and Mubende, representative of the climate in the various coffee districts and graphs drawn to illustrate these.

15. Though there has not yet been time to interpret all that these diagrams represent there does appear to be some connection between the amount of damage done by *Antestia* and the degree of dryness of a district.

16. It will be seen that the order of dryness of the various districts as expressed by these diagrams is:—

Masaka Mubende		Masindi Bwavu	} about the same
Kampala Kivuvu	} about the same	Hoima River Fort Portal	

17. Judging from the limited information available at the moment one is inclined to think that with the exception of Hoima River the severity of attack of *Antestia* appears to follow the same sort of order. Of course more information is needed on this point before definite conclusions can be arrived at.

18. Experiments re falling berries have been conducted and are still in progress. Coffee bushes about three and a half years of age were transplanted into tubs twenty inches deep. The soil was well manured in order to help the trees to recover as much as possible from the shock of transplanting and these have been watered twice each week. Some of these bushes had flowered before being transplanted, others have flowered since, and berries of all ages from one month to

three months were present at the commencement of the experiment. These bushes in turn are being made to undergo a drought of fourteen days duration when the berries are one to five months old, which at least is what often happens in the field. The result up to date has been the non-setting of flowers, the falling of a few green berries and the further production of berries which turned black and fell off the bush when touched and this to the extent in one case of 43 per cent of the crop.

These experiments along with others will be continued but the results to date do show that some of the causes of loss of crop attributed to *Antestia* may not be due to *Antestia* at all but may be physiological.

Until further work is done upon the control of *Antestia* one would advise the following as being the best known means of control:—

1. Cultivate the soil, especially in dry weather in order to conserve as much moisture as possible during that period, and do all that is practicable to produce strong healthy bushes.

2. Grow coffee under light shade, the reason being that apart from any benefit the coffee may derive directly from that shade, it has been noticed that *Antestia* even when present in large numbers appears to cause little damage under shade.

3. Where possible collect all eggs and at the same time *Antestia* keeping the eggs in a thin layer in cigar boxes containing a glass tube at one end and allow to escape in the coffee shamba all parasites which hatch out.

4. The quickest method of observing the bug present on the bushes is to apply smoke to the bush when all stages of nymphs and adults will be seen to immediately commence moving towards the centre of the tree and finally run down the main stem on to the ground, when they can then be collected. Each planter can experiment for himself with local materials to find the best method of producing and applying the smoke. One has found the best method to be that of tying loosely on the end of a stick a piece of old bark-cloth. This when lighted produces a dense smoke and burns very slowly, with little heat, so that the stick can be readily applied to any portion of the tree being smoked. In this way *Antestia* can be quickly collected.

5. Since *Antestia* eggs take at least six days to hatch and the nymphs do not move for another day one would advise smoking at least once every fourteen days when really trying to keep down this pest.

Here I would like to express my deep sense of gratitude to the Chemical Warfare Committee for the valuable information which they have so kindly supplied which is a summary of all information available on the use of poisonous gases, &c., as insecticides.

H. WILKINSON,
Assistant Entomologist.

APPENDICES.

Appendix No. 1.

IMPERIAL INSTITUTE.

REPORT ON BANANA FLOUR FROM UGANDA.

The fourteen samples of banana flour which are the subject of this report were forwarded to the Imperial Institute by the Director of Agriculture, and are referred to in his letters No. 224/511 of the 6th February and No. 569/606 of the 29th March, 1923.

It was stated that the flour had been prepared at the Government Plantation, Kampala, and the Botanic Gardens, Entebbe.

Description.

The flours were all coarsely ground and rather lumpy, and in the case of Nos. 6, 10, 13, 18, 20 and 22 live insects were present. The colour and other characters of the flours were as follows:—

"*No. 4, Sira.*"—Weight 14 ozs. Brownish-cream with a very slight taste and odour.

"*No. 6, Nabusa.*"—Weight 12 ozs. Darker than No. 4 but similar in odour. It had a mild taste.

"*No. 7, Kibuzi.*"—Weight 15 ozs. Brownish-cream, with a slightly harsh taste.

"*No. 10, Lusamba.*"—Weight 14 ozs. Dark cream with a good and mild taste and no pronounced odour.

"*No. 13, Mbide.*"—Weight 15 ozs. Light brown. The odour was strong and the taste not so mild as that of No. 4.

"*No. 15, Naudigobi.*"—Weight 14 ozs. Pale yellowish-brown with a taste similar to that of sample No. 6, and a pronounced odour.

"*No. 16, Nakyetengu.*"—Weight 1 lb. Buff, with a mild pleasant taste.

"*No. 17, Sitakange.*"—Weight 14 ozs. Cream, with a taste similar to that of sample No. 4, and a slight odour.

"*No. 18, Nakabingi.*"—Weight 14 ozs. Light brownish-cream, with a mild and pleasant taste and a slight odour.

"*No. 20, Musi bampima.*"—Weight 14 ozs. Pale yellowish-cream, with a mild taste and slight odour.

"*No. 21, Simbolukono.*"—Weight 13 ozs. Slightly darker than No. 16 and somewhat inferior to it in taste.

"*No. 22, Naserugiri.*"—Weight 14 ozs. Rather darker and softer than sample No. 17 and had a slight odour and taste.

"*No. 23, Nambi.*"—Weight 14 ozs. Pale yellowish-cream, lighter than sample No. 20 and with a mild, sweet taste and slight odour.

"*No. 26, Nyuka.*"—Weight 13 ozs. Slightly darker than sample No. 7 and with a mild taste.

Results of Examination.

The samples were all submitted to chemical examination for starch, sugar and proteins, and three typical samples (Nos. 13, 17 and 26) were selected for complete analysis. The results are shown in the following table:—

	No. 4	No. 6	No. 7	No. 10	No. 13	No. 15	No. 16	No. 17	No. 18	No. 20	No. 21	No. 22	No. 23	No. 26
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Moisture	11·4	10·7	11·5	11·8	11·3	10·3	11·3	12·2	11·6	10·5	11·4	10·9	10·8	10·8
Crude Proteins ...	5·5	5·8	5·3	5·5	5·7	5·7	6·0	5·4	5·0	5·8	5 6	5·7	4·9	6·6
Fat	...	...	...	...	1·1	...	...	0·9	...	...	...	...	...	0·8
Starch (by acid hydrolysis)	64·8	59·3	66·8	64·8	56·7	55·4	64·4	65·8	66·2	62·8	64·9	63·7	61·4	62·3
Other Carbohydrates (by difference).	...	...	...	...	19·7	...	...	11·4	...	...	...	...	...	14·3
Crude Fibre	...	...	...	...	1·5	...	...	1·3	...	...	...	...	...	1·2
Ash	...	...	...	...	4·0	...	...	3·0	...	...	...	...	...	4·0
Reducing sugars expressed as dextrose, per cent.	4·03	7·09	2·99	3·24	5·31	12·33	3·53	3·72	3·21	6·90	2·74	5·40	5·31	4·22
Non-reducing sugars, expressed as sucrose, per cent.	0·11	*nil*	0·17	0·37	0·64	*nil*	0·71	*nil*	0·21	0·36	1·22	*nil*	*nil*	*nil*
Nutrient Ratio ...	...	...	...	...	1 : 13·8	...	...	1 : 14·7	...	...	...	...	...	1 : 11·9
Food Units	...	...	...	...	93	...	...	93	...	...	...	...	...	95

Remarks.

From the foregoing results it will be seen that the present samples generally resemble those which were the subject of Imperial Institute report dated the 13th February, 1923, in the amounts of Protein which they contain. Nos. 18 and 23 contain the lowest percentages of this constituent and Nos. 16 and 26 the highest.

As regards carbohydrates the percentages of starch in Nos. 6, 13 and 15 are rather lower than in the other samples. In the case of No. 15, however, the percentage of reducing sugar is much higher than in any other sample, and this would more than compensate for the low amount of starch. In No. 6 the deficiency in starch is also compensated to some extent by a high percentage of sugar, but in No. 13 the sum of the starch and sugars is lower than in the other cases. In general as regards the carbohydrates present it may be stated that the samples are of equal food value, except Nos. 13 and 15 which on account of the large amount of sugars present are somewhat superior.

On comparing the whole of the samples, including the 17 reported on in February, 1923, the following may be selected as the best in food value:—Nos. 2, 5, 8, 14, 15, 16 and 26; the least satisfactory being Nos. 9, 11, 18, 23, 25, 27, "Red Gonja" and "Yellow Banana." It should be noted however that the differences between the food values of the various flours, as deduced from their chemical composition, are only slight, except in the case of the "Red Gonja" and "Yellow Banana" which have a distinct lower protein content than the others.

As stated in the previous report the differences in the colour and taste of the various samples are probably of very little importance in connection with the use of the flours as native food-stuffs.

SEPTEMBER, 1923.

Appendix No. 2.

IMPERIAL INSTITUTE.

REPORT ON *Hyparrhenia Rufa* HAY FROM UGANDA.

The *Hyparrhenia rufa* hay which is the subject of this report was forwarded to the Imperial Institute by the Director of Agriculture and is referred to in his letter of the 23rd July, 1923.

It was stated that the grass grows well in Uganda and it was desired to ascertain the value of the hay as a fodder.

Description.

The sample weighed about 4 lb. and consisted of dried long grass, which had been reaped when in flower and cut into pieces 18 inches long. The upper part of the stems was of a greenish tint and the flowering heads were red.

Results of Examination.

The hay was submitted to chemical examination at the Imperial Institute and the results are shown in the following table in comparison with the figures recorded for hay from the same plant grown in Brazil, and for Elephant grass *Pennisetum purpureum* cut when eight weeks old.

	Present sample of *Hyparrhenia rufa* hay (reaped when in flower).	*Hyparrhenia rufa* hay from Brazil (reaped when in flower).	Elephant Grass* (eight weeks).
	per cent.	*per cent.*	*per cent.*
Moisture	8·5	8·0	8·0
Crude Protein	4·8	5·1	7·1
Fat	0·9	2·5	1·0
Carbohydrates, etc. (by difference) ...	39·3	36·3	38·7
Crude Fibre	38·0	37·7	31·0
Ash	8·5	10·4	14·2
Nutrient Ratio	1 : 8·6	1 : 8·2	1 : 5·8
Food Units	54	55	59

* Calculated from an analysis of Elephant grass containing 78·1 per cent of moisture.

The *Hyparrhenia rufa* hay contained no alkaloids or cyanogenetic glucosides.

Remarks.

It will be seen that the *Hyparrhenia rufa* hay is very similar in composition to hay prepared from the same species in Brazil, but that it contains less protein and a higher percentage of crude fibre than young Elephant grass.

Hyparrhenia rufa is one of the principal fodder plants in Central Brazil and is highly esteemed for fattening and as a maintenance ration, although not favourable to milk production. The best results are stated to be obtained if the plant is cut for hay when it has reached a height of two to three feet.

21ST DECEMBER, 1923.

Native Agriculture—Estimates of Approximate Acreages of Crops under Cultivation.

Province and District.	Potatoes.		Millets.		Rubbers.		Cotton.	Coffee.	Plantains	Maize.	Dhal.	Beans	Sugar Cane.	Sim-Sim.	Ground-nuts.	Cassava.	Tobacco.	Wheat.	Rice.	Chillies.	Cacao.	Peas.	Miscellaneous.
	Sweet	English.	Mtama.	Wimbi.	Para.	Other.																	
	ACRES.																						
BUGANDA :—																							
Mengo ..	120,500	250	375	750	750	..	70,000	4,500	325,000	4,200	..	7,000	1,250	5,000	3,500	5,000	500	..	150	1,000	50	200	..
Entebbe ..	10,000	300	600	150	100	..	20,466	2,500	151,000	3,300	..	4,500	1,600	1,000	2,000	6,000	400	..	50	16,000	12	242	1
Masaka ..	2,397	..	..	196	80	..	10,000	3,115	65,000	697	5	361	..	111	692	225	..	..	5	1,780	..	214	4,840
Mubende ..	25,000	40	2,000	10,000	..	..	10,866	700	40,000	5,000	100	3,500	150	2,000	1,000	1,000	1,000	40	15	400	..	250	..
TOTAL ..	157,897	590	2,975	11,096	930	..	111,332	10,818	581,000	13,197	105	15,361	3,000	8,111	7,192	12,225	1,900	40	220	13,180	62	906	4,841
EASTERN :—																							
Busoga ..	10,000	..	..	2,500	..	..	61,300	..	50,000	500	..	..	..	300	400	3,000	..	..	50	..	..	..	..
Budama ..	24,172	2	6,409	30,000	..	.	49,536	50	20,000	3,111	100	24,172	500	5,383	6,641	20,000	..	..	9,834	4,138	..	..	..
Bugwere ..	1,500	..	3,000	28,000	..	..	57,560	..	1,500	1,500	..	1,500	..	1,500	1,000	3,000	..	..	50	50	..	..	..
Bugishu ..	300	50	1,500	6,450	2	..	21,210	133	30,000	500	50	500	..	300	100	1,000	..	..	10	10	..	..	..
Teso ..	14,000	..	30,000	100,000	..	..	68,000	..	1,000	600	..	5,000	..	8,000	14,000	4,000	..	..	..	..	..	..	..
Lango ..	10,000	..	30,000	100,000	..	..	45,000	..	500	..	..	10,500	..	40,000	12,000	2,000	..	..	..	..	..	35,000	..
Karamoja } Lobor }										NO	BASIS	FOR AN	ESTIM	ATE.									
TOTAL ..	59,972	52	70,909	266,950	2	..	302,606	183	103,000	6,211	150	41,672	500	55,483	34,141	33,000	..	..	9,944	4,198	..	35,000	..
NORTHERN :—																							
Bunyoro ..	12,000	30	500	6,250	..	..	2,500	150	5,300	2,000	..	5,800	2	4,000	2,000	550	150	1	2	2	..	2,000	50
Gulu ..	1,000	5	1,500	5,000	..	..	3,200	2	100	500	..	800	2	4,000	250	200	75	..	10	..	..	..	..
Chua ..	4,400	..	13,320	13,840	..	..	1,500	..	6	2	..	1,742	..	5,670	1,630	140	..	..	10	..	..	..	..
West Nile ..	10,000	100	35,000	45,000	..	..	2,500	1	50	800	..	..	5,000	..	40,000	1,000	50	25	..	350	..	..	10,000
TOTAL ..	37,400	135	50,320	70,090	..	..	9,700	153	5,456	3,302	..	8,342	5,004	13,670	43,880	1,890	275	26	22	352	..	2,000	10,050
WESTERN :—																							
Toro ..	20,000	20	1,000	40,000	..	..	800	..	50,000	1,500	50	20,000	400	1,000	1,000	200	5	500	150	60	..	1,000	50
Ankole ..	20,000	15	6,000	25,000	..	..	2,300	200	50,000	10,000	3	10,000	9	25	300	5,000	500	..	2	1,000	..	13,000	..
Kigezi ..	12,600	120	40,000	40,000	..	..	..	8	12,000	5,100	..	40,000	5	200	150	50	300	30	..	5	..	105,000	..
TOTAL ..	52,000	155	47,000	105,000	..	..	3,100	208	92,000	16,600	53	70,000	414	1,225	1,450	5,250	805	530	152	1,065	..	119,000	50
RUDOLF :—																							
Turkana } Dabossa }										NO	BASIS	FOR AN	ESTIM	ATE.									
GRAND TOTAL ..	307,269	932	171,204	453,136	932	..	426,738	11,362	781,456	39,310	308	135,375	8,918	78,489	86,663	52,365	2,980	596	10,338	18,795	62	156,906	14,941

Appendix No. 4.

Native Agriculture.—Live Stock.

Province and District.		Cattle.	Sheep.	Goats.	Horses.	Mules.	Donkeys.
BUGANDA:—	Mengo	41,184	?	120,000	—	1	12
	Entebbe	19,491	7,141	47,000	1	—	4
	Masaka	39,000	6,435	20,940	1	2	4
	Mubende ...	17,851	4,708	43,624	—	—	—
	TOTAL ...	117,526	18,284	231,564	2	3	20
EASTERN:—	Busoga	58,217	?	?	—	1	1
	Budama	58,622	?	?	—	—	—
	Bugwere	58,657	4,014	29,346	—	2	100
	Bugishu	115,026	14,256	46,738	—	1	40
	Teso ...	202,020	24,400	94,400	—	—	—
	Lango ...	168,195	45,000	75,000	—	1	1
	Karamoja ...	100,000	?	?	—	—	12,000
	TOTAL ...	760,737	87,670	245,484	—	5	12,142
NORTHERN:—	Bunyoro ...	3,559	5,099	21,264	—	1	2
	Gulu	24,500	9,400	25,554	—	2	25
	Chua	25,000	?	?	—	2	4
	West Nile ...	96,300	25,000	60,000	1	2	4
	TOTAL ...	149,359	39,499	106,818	1	7	35
WESTERN:—	Toro	53,487	27,200	51,500	—	—	3
	Ankole	101,300	70,000	110,000	—	1	1
	Kigezi	44,800	61,000	145,000	—	—	—
	TOTAL ...	199,587	158,200	306,500	—	1	4
	GRAND TOTALS ...	1,227,209	303,653	890,366	3	16	12,201

European Agriculture.

COMPILED FROM RETURNS FROM 170 PLANTATIONS.

Province and District.	No. of Estates.	Total Acreage taken up.	Total Acreage under cultivation.	Total Acreage not cultivated.	Acreage of Coffee (*Arabica*).		Acreage of Coffee (*Robusta*).		Acreage of Para Rubber.		Acreage of Other Rubbers.		Acreage of Cacao.		Acreage of Tea.		Cotton.	Maize.	Sugar.	Miscellaneous Crops.
					Under 2 years.	Over 2 years.	Under 2 years.	Over 2 years.	Under 5 years.	Over 5 years.	Under 5 years.	Over 5 years.	Under 5 years.	Over 5 years.	Under 5 years.	Over 5 years.				
BUGANDA :—																				
Mengo	68	35,589	12,587	23,002	316	6,685	83	139	832	7,907	—	358	—	1,179	1	—	172	32	124	167
Entebbe	16	6,730	2,616	4,114	76	2,076	15	5	420	1,200	—	—	—	—	—	—	64	11	31	—
Masaka	16	5,851	1,366	4,485	132	1,205	—	—	60	382	—	—	—	29	—	—	—	—	—	—
Mubende	13	8,503	2,453	6,050	53	2,047	45	5	260	290	—	—	—	17	51	50	60	—	15	—
TOTAL ...	113	56,673	19,022	37,651	577	12,013	143	149	1,572	9,779	—	358	—	1,225	52	50	296	43	170	167
EASTERN :—																				
Busoga	10	10,500	1,762	8,738	59	1,307	91	2	60	60	—	—	—	—	—	—	160	—	70	153
NORTHERN :—																				
Bunyoro	23	14,218	3,905	10,313	266	3,279	—	40	305	705	—	—	—	15	—	—	—	155	—	150
WESTERN :—																				
Toro	24	12,417	2,021	10,396	351	1,610	—	18	—	--	—	—	10	—	2	—	—	17	2	11
GRAND TOTAL ...	170	93,808	26,710	67,098	1,253	18,209	234	209	1,937*	10544†	--	358	10	1,240‡	54	50	456§	215	242**	481††

NOTE :—Small acreages are also cultivated under the control of the various Missions.

* 1,655 acres interplanted with coffee.
† 5,948 „ „ „ „
‡ 506 „ „ „ „ and 328 with rubber.
§ 99 acres interplanted with coffee.
** 20 „ „ „ rubber.
†† 115 „ „ „ coffee and 113 with rubber.

COMPILED FROM RETURNS OF 27 PLANTATIONS.

Province and District.	Number of Estates.	Total Acreage taken up.	Total Acreage under cultivation.	Total Acreage not cultivated.	Acreage of Coffee (*Arabica*).		Acreage of Coffee (*Robusta*).		Acreage of Para Rubber.		Acreage of Cacao.		Cotton.	Sugar.	Miscellaneous Crops.
					Under 2 years.	Over 2 years.	Under 2 years.	Over 2 years.	Under 5 years.	Over 5 years.	Under 5 years.	Over 5 years.			
BUGANDA :—															
Mengo	11	7,070	3,815	3,255	65	915	...	105	50	1,135	...	300	20	2,480	...
Entebbe	3	785	321	464	56	115	...	...	72	69	...	...	...	120	...
Masaka	3	1,782	496	1,286	20	253	...	5	...	183	...	20	70	15	114
Mubende	7	2,932	1,422	1,510	40	922	...	5	20	20	...	...	15	440	...
TOTAL ...	24	12,569	6,054	6,515	181	2,205	...	115	142	1,407	...	320	105	3,055	114
EASTERN :—															
Busoga	3	1,735	193	1,542	15	145	3	...	...	...	5	...	...	25	...
GRAND TOTAL ...	27	14,304	6,247	8,057	196	2,350	3	115	142*	1,407†	5	320‡	105	3,080§	114

* 130 acres interplanted with coffee. † 300 acres interplanted with coffee.
‡ 1,120 „ „ § 40 „ „

Live Stock on European Plantations.

Appendix No. 7.

Province and District.	Cattle.	Mules.	Donkeys.	Sheep.	Goats.	Pigs.
BUGANDA:—						
Mengo	255	3	1	28	16	20
Entebbe	185	—	—	—	—	—
Masaka	140	—	—	—	—	21
Mubende ...	455	—	—	—	—	—
TOTAL ...	1,035	3	1	28	16	41
EASTERN :—						
Busoga	169	—	1	—	52	32
NORTHERN :—						
Bunyoro ...	103	2	1	2	—	—
WESTERN :—						
Toro	232	—	5	—	3	25
GRAND TOTAL ...	1,539	5	8	30	71	98

Live Stock on Indian Plantations.

Province.	Cattle.	Donkeys.	Goats.	Pigs.
BUGANDA	119	3	52	32

Comparative Statement of Exports from the Uganda Protectorate for the year ended 31st December, 1923.

Articles.	Unit.	From 1st Jan. to 31st Dec., 1923.		From 1st Jan. to 31st Dec., 1922.		Increase.		Decrease.	
		Quantity	£	Quantity	£	Quantity	£	Quantity	£
Cotton, Raw	centals	352,184	2,026,820	193,159	877,625	159,025	1,149,195	—	—
„ Seed	tons	9,794	52,964	2,124	9,532	7,670	43,432	—	—
Coffee, Raw	cwts.	40,931	108,490	51,262	99,227	—	9,263	10,331	—
„ Prepared	„	1	6	—	—	1	6	—	—
Rubber, Raw	centals	3,986	9,926	1,249	3,741	2,737	6,185	—	—
Chillies	cwts.	18,223	58,660	11,935	52,768	6,288	5,892	—	—
Ghee	„	128	365	909	4,329	—	—	781	3,964
Jaggree	„	1,127	921	2,398	3,742	—	—	1,271	2,821
Ground Nuts	tons	175	2,714	507	9,236	—	—	332	6,522
Cacao	cwts.	399	1,079	565	2,370	—	—	166	1,291
Sim-Sim	tons	1,435	24,383	2,796	47,100	—	—	1,361	22,717
„ Oil	gals	16	4	57*	162	—	—	—	158
Castor Seed	tons	10	114	28	574	—	—	18	460
Tea	cwts.	48	337	—	—	48	337	—	—
Fruits	value	—	462	—	—	—	462	—	—
Provisions, Fresh	„	—	287	—	—	—	287	—	—
Skins, Sheep and Goats	No.	314,914	14,839	2,832*	18,680	—	—	—	3,841
„ Miscellaneous	„	16	32	—	43	—	—	—	11
Hides, Dry and Dry Salted	cwts.	10,423	28,855	5,397	11,197	5,026	17,658	—	—
Hippo Teeth	„	101	1,271	138	1,534	—	—	37	263
Horns	„	15	1,033	9	626	6	407	—	—
Ivory	„	807	58,673	1,222	68,419	—	—	415	9,746
Timber	C. ft.	50,194	541	—	35	—	506	—	—
Miscellaneous Produce	value	—	568	—	4,470	—	—	—	3,902
Animals, Living	„	—	50	—	—	—	50	—	—
Goods, Manufactured, unenumerated	„	—	161	—	313	—	—	—	152
Goods, Unmanufactured, „	„	—	123	—	70	—	53	—	—
Totals	—	—	2,393,678	—	1,215,793	—	1,233,733	—	55,848

* Cwts. Net In crease 1,177,885.

Appendix No. 9.

Comparative Statement of Exports from the Uganda Protectorate.

Articles.	Unit.	Year ended 31st March, 1920.		Year ended 31st Dec., 1920.		Year ended 31st Dec., 1921.		Year ended 31st Dec., 1922.		Year ended 31st December, 1923.	
		Quantity	£	Quantity	£	Quantity	£	Quantity	£	Quantity	£
Cotton, Raw	centals	146,119	1,209,663	208,746	3,919,453	325,463	1,281,357	193,159	877,625	352,184	2,026,820
Cotton, Seed	tons.	5,273	25,783	2,362	10,873	4,865	22,113	2,124	9,532	9,794	52,964
Coffee, Husked	cwts.	54,694	156,668	36,808	129,901	44,682	89,452	} 51,262	99,227	40,931	108,490
Coffee, Parchment	„	4,266	5,046	4,385	8,009	4,174	4,586				
Coffee, Buni	„	...	...	1,919	3,361	...	...	...	...	...	...
Coffee, Prepared	„	...	...	...	...	...	...	...	...	1	6
Rubber, Raw	centals	3,903	25,992	4,502	32,765	740	4,441	1,249	3,741	3,986	9,926
Chillies	cwts.	5,153	10,251	4,535	14,176	7,355	30,213	11,935	52,768	18,223	58,660
Ghee (Clarified Butter)	„	3,196	15,303	1,744	9,539	481	2,075	909	4,329	128	365
Jaggree (Unrefined Sugar)	„	432	502	777	1,226	2,593	4,341	2,398	3,742	1,127	921
Ground Nuts	tons.	57	1,388	12	359	2	35	507	9,236	175	2,714
Cacao	cwts.	660	1,231	1,235	4,933	329	1,475	565	2,370	399	1,079
Sim-sim	tons.	1,169	30,697	2,150	69,365	1,003	18,907	2,796	47,100	1,435	24,383
Sim-sim Oil	gals.	102*	470	8*	19	12*	47	57*	162	16	4
Cotton Seed Oil	„	355*	876	257*	1,150	...	...	...	...	...	...
Castor Seed	tons.	426	1,443	388	828	13	302	28	574	10	114
Tea	cwts.	...	...	...	..	...	...	...	...	48	337
Fruits	value	...	...	...	...	...	...	...	...	...	462
Provisions, Fresh	„	...	...	...	...	...	...	...	...	...	287
Skins, Sheep and Goats	No.	4,295*	28,230	2,776*	34,130	3,000*	20,041	2,832*	18,680	314,914	14,839
„ Miscellaneous	„	...	9	...	79	...	34	...	43	16	32
Hides, Dry and dry salted	cwts.	52,171	242,238	20,528	118,184	1,985	6,211	5,397	11,197	10,423	28,855
Hippo Teeth	„	115	1,074	68	876	19	211	138	1,534	101	1,271
Horns	„	3	250	12	1,411	59	4,524	9	626	15	1,033
Ivory	„	1,438	65,952	1,104	74,298	882	46,599	1,222	68,419	807	58,673
Timber	C. ft.	1,975*	1,311	1,074*	905	306*	343	...	35	50,194	541
Miscellaneous Produce	value	...	3,395	...	3,615	...	1,691	...	4,470	...	568
Animals, Living	„	3	3	...	...	...	...	...	...	...	50
Goods, Manufactured, unenumerated	„	...	694	...	671	...	483	...	313	...	161
Goods, Unmanufactured, unenumerated	„	...	50	...	358	...	57	...	70	...	128
Totals		...	1,828,537	...	4,440,484	...	1,539,538	...	1,215,793	...	2,393,678

* Cwts.

Comparative Statement of Exports—the Produce of the Uganda Protectorate—shewing Quantities and Values from the various Ports and Stations, for the Years ended 31st December, 1922 and 1923.

ARTICLES.	Unit.	BUKAKATA.				ENTEBBE.				KAMPALA.				KIBANGA.				JINJA.				MJANJI.				OTHER PORTS AND STATIONS.				TOTALS.				INCREASE.		DECREASE.	
		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.		Year ended 31-12-23.		Year ended 31-12-22.					
		Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£
Cotton, Raw	centals	8,187	45,903	6,741	32,800	...	....	13	59	82,020	477,740	81,348	371,473	...	...	....	....	128,279	733,575	49,497	231,219	50,588	290,808	15,205	68,425	83,110	478,794	40,355	181,649	352,184	2,026,820	193,159	877,625	159,025	1,149,195	....	...
„ Seed	tons	....	...	87	391	...	...	...	....	3,447	18,979	1,217	5,452	28	157	....	....	2,772	14,091	431	1,951	341	1,910	....	....	3,206	17,827	389	1,738	9,794	52,964	2,124	9,532	7,670	43,432	...	....
Coffee, Raw	cwts.	340	982	1,111	1,982	3	11	442	682	24,120	65,356	27,920	59,602	5,773	22,032	6,093	13,070	4,039	8,396	3,568	5,361	352	936	722	1,106	6,304	10,777	11,496	17,424	40,931	108,490	51,262	99,227	...	9,263	10,331	....
„ Prepared	„	....	...	...	...	....	...	....	...	1	6	....	...	...	...	...	....	....	....	....	....	...	...	...	...	...	...	...	...	3,986	9,926	1,249	3,741	2,737	6,185	...	...
Rubber, Raw	centals	...	...	...	...	91	227	158	558	2,184	5,423	569	1,415	21	52	...	...	1,690	4,224	522	1,768	...	...	...	...	...	...	...	...	18,223	58,660	11,935	52,768	6,288	5,892	...	...
Chillies	cwts.	2,748	5,332	203	874	...	...	10	52	13,205	45,674	5,058	22,139	311	627	72	201	1,916	6,290	5,277	23,608	14	36	467	2,285	29	101	848	3,609	198	365	909	4,329	....	...	781	3,964
Ghee	„	42	124	32	162	....	2	2	12	47	126	189	913	....	...	...	....	9	29	328	1,529	25	69	160	768	5	15	198	945	1,127	921	2,398	3,742	....	...	1,271	2,821
Jaggree	„	...	...	...	...	....	....	52	89	....	....	706	1,032	...	...	...	....	1,127	921	1,419	2,250	...	....	...	....	....	....	221	371	175	2,714	507	9,236	...	....	332	6,522
Ground Nuts	tons	....	...	...	...	....	...	..	...	5	82	....	4	...	...	....	....	12	172	1	26	3	50	87	1,570	155	2,410	419	7,636	399	1,079	565	2,370	....	....	166	1,291
Cacao	cwts.	...	...	...	...	....	...	..	2	238	440	92	386	...	...	343	1,434	161	639	130	548	...	...	...	....	....	....	....	....	1,435	24,383	2,796	47,100	....	....	1,361	22,717
Simsim	tons	...	...	...	...	....	...	..	...	45	808	121	2,030	...	...	....	....	20	379	17	287	108	1,981	122	2,082	1,262	21,215	2,536	42,701	16	4	57*	162	....	....	...	158
„ Oil	gals.	...	...	...	...	....	...	....	...	....	....	3*	9	...	...	....	....	16	4	47*	134	...	...	...	....	....	....	7*	19	10	114	28	574	...	....	18	460
Castor Seed	tons	...	...	...	...	....	...	....	...	10	114	28	574	...	...	....	....	....	...	...	...	....	...	...	....	....	....	...	...	48	337	....	....	48	337	...	...
Tea	cwts.	...	...	...	...	....	....	....	...	48	337	....	....	...	...	....	....	....	...	....	....	...	...	....	....	....	....	....	....	....	462	....	....	...	462	...	...
Fruits	value	....	...	...	...	....	30	....	...	....	214	....	....	...	...	....	....	....	216	...	....	...	1	....	....	....	....	....	....	....	....	287	....	....	...	287	...	...
Provisions, Fresh	„	....	3	...	...	....	2	...	...	....	215	....	....	...	...	....	....	....	58	...	....	...	9	..	....	....	....	....	....	....	287	....	....	...	....	...	3,841
Skins, Sheep and Goat	No.	....	...	9*	76	....	....	...	...	195,815	8,990	962*	6,819	...	...	....	....	70,013	3,433	759*	5,326	29,003	1,424	124*	837	20,083	992	978*	5,622	314,914	14,839	2,832*	18,680	...	...	...	11
„ Miscellaneous	„	....	...	...	...	4	4	...	...	6	6	....	42	...	...	....	....	....	....	....	....	1	1	....	....	5	21	....	....	16	32	....	43	...	...	...	...
Hides, dry and dry salted	cwts.	242	665	1,349	2,714	....	....	...	....	5,687	15,966	2,209	4,682	...	...	....	....	1,013	2,814	629	1,282	2,984	7,967	919	1,853	497	1,443	291	636	10,423	28,855	5,397	11,197	5,026	17,658	...	...
Hippo Teeth	„	....	...	...	...	....	...	...	...	38	491	5	60	...	...	....	....	1	11	109	1,205	11	128	7	80	51	641	17	189	101	1,271	138	1,534	...	....	37	263
Horns	„	....	...	...	...	....	...	...	....	5	347	7	490	...	...	....	....	....	...	1	43	...	...	...	...	10	686	1	93	15	1,033	9	626	6	407	...	...
Ivory	„	2	162	...	...	....	30	1	30	619	46,040	1,199	67,127	...	...	....	....	7	503	5	278	...	17	2	142	179	11,921	15	842	807	58,673	1,222	68,419	...	...	415	9,746
Timber	cu. ft.	....	....	...	1	216	1	....	....	...	...	...	32	...	...	....	....	48,820	527	...	2	1,158	13	...	...	...	...	...	....	50,194	541	....	35	...	506	...	...
Miscellaneous Produce	value	....	29	...	57	....	24	...	96	...	97	...	1,917	...	...	....	....	...	322	...	2,091	...	88	...	296	...	8	...	13	...	568	...	4,470	....	...	...	3,902
Animals, Living	„	....	...	...	...	....	50	...	...	...	...	...	....	....	....	....	....	...	...	...	6	...	...	...	...	...	...	...	....	...	50	...	....	....	50	...	...
Goods, Manufactured, unenumerated	„	....	76	...	32	....	6	...	1	...	60	...	250	....	....	....	....	...	1	...	6	...	...	...	1	...	18	...	23	...	161	...	313	....	...	...	152
Goods, Unmanufactured, „	„	....	....	...	6	....	5	...	2	...	77	...	13	....	....	....	....	...	22	...	49	...	...	...	....	...	19	...	...	...	123	...	70	....	53	...	...
TOTALS		....	53,876	...	39,125	...	392	...	1,583	...	687,588	...	546,461	...	22,868	...	14,705	...	776,627	...	270,964	...	305,438	...	79,445	...	546,889	...	263,510	...	2,393,678	...	1,215,793	...	1,233,733	...	55,848

* Cwts.

Net Increase £1,177,885.

Details of Exports from other Ports and Stations are as follows:—

Appendix No. 11.

ARTICLES.	Unit.	LUZINGA.		MBULAMUTI.		NAMASAGALL		MASINDI PORT.		PALANGO.		ATURA.		KACHUNG.		KELLE.		SANGAI.		BUGONDO.		LALLI.		TOTALS.	
		Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity.	£	Quantity	£
Cotton, Raw	centals	...	...	18,525	107,981	1	6	..	...	2,156	12,304	822	4,931	9,694	55,113	2,371	13,554	...	...	13,381	79,687	36,160	205,218	83,110	478,794
„ Seed	tons	227	1,216	1,000	5,570	...	...	...	...	95	518	409	2,346	...	...	46	252	322	1,803	215	1,141	892	4,981	3,206	17,827
Coffee, Raw	cwts.	...	...	...	...	...	...	6,304	10,777	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,304	10,777
Chillies	„	...	...	24	91	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	10	...	...	29	101
Ghee	„	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	15	...	...	5	15
Ground Nuts	tons	...	...	...	...	...	...	21	329	...	...	..	..	...	...	..	..	...	...	121	1,877	13	204	155	2,410
Simsim	„	...	...	...	...	...	...	...	...	21	376	825	13,607	10	179	74	1,334	227	4,086	85	1,275	20	358	1,262	21,315
Fruits	value	...	...	...	...	...	...	...	1	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	1
Skins, Sheep and Goat	No.	...	...	3,051	144	...	...	...	...	...	...	...	...	...	...	1,255	62	2,862	143	10,689	533	2,226	110	20,083	992
„ Miscellaneous	„	...	...	...	...	...	...	5	21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	21
Hides, dry and dry salted	cwts.	...	..	50	147	...	...	174	507	...	...	..	..	...	...	40	104	28	81	197	580	8	24	497	1,443
Hippo Teeth	„	...	...	...	...	...	...	39	507	...	...	12	134	...	...	...	...	...	...	...	...	...	...	51	641
Horns	„	...	...	...	...	...	...	7	459	...	...	3	227	...	...	...	...	...	...	...	...	...	...	10	686
Ivory	„	...	...	...	...	...	...	174	11,579	...	...	1	56	...	...	4	286	...	...	...	...	...	...	179	11,921
Miscellaneous Produce	value	...	...	...	...	...	...	...	8	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	8
Goods, Manufactured, unenumerated	„	...	...	...	4	...	...	...	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18
Goods, Unmanufactured, unenumerated	„	..	...	...	...	...	...	...	6	...	...	...	13	...	...	...	...	...	...	...	...	...	...	...	19
TOTALS		...	1,216	...	113,937	...	6	...	24,208	...	13,198	...	21,314	...	55,292	...	15,592	...	6,113	...	85,118	...	210,895	...	546,889

Entebbe Meteorological Statement for the Year 1923.

Lat. 0° 4′ 31″ N. Long. 32° 28′ 30″ E. Height of Barometer above M. S. L. 3842 feet.

Month.	7 A.M.				2 P.M.				9 P.M.								
	Barometer corrected and reduced to 32° F.	Attached Thermometer	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Attached Thermometer	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Attached Thermometer	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rainfall.	No. of days Rain fell.
1923.															Hrs. Mts.	Ins. Cts.	
January	26·166	76·3	71·7	66·7	26·122	84·4	78·8	70·4	26·119	72·2	71·1	66·6	81·6	61·5	3-13	0·24	3
February	26·189	71·8	68·9	65·5	26·139	80·0	75·8	67·9	26·161	69·8	68·8	65·4	78·4	62·6	3-34	4·46	9
March	26·183	75·4	70·2	66·6	26·151	84·0	77·3	70·0	26·163	71·6	70·0	66·1	80·6	62·9	6-45	9·81	10
April	26·219	70·2	68·2	65·5	26·169	78·7	71·4	70·0	26·199	68·8	68·1	66·7	77·0	62·1	4-17	9·90	21
May	26·218	69·7	67·6	65·1	26·178	78·3	73·2	70·0	26·117	69·3	67·9	66·0	75·5	61·6	5-13	24·80	20
June	26·264	73·3	69·0	66·1	26·179	80·5	75·5	69·8	26·242	72·4	71·9	67·9	77·6	61·7	6-45	3·99	11
July	26·252	67·8	65·9	63·7	26·201	74·5	71·5	64·0	26·201	68·6	68·4	64·9	75·5	61·7	3-26	5·50	19
August	26·218	72·3	67·5	65·2	26·188	78·4	74·1	68·8	26·188	71·2	68·3	65·3	76·1	61·4	6-43	3·31	12
September	26·217	74·5	68·2	65·3	26·153	79·5	75·2	70·5	26·158	70·2	68·9	66·3	77·7	61·3	6-26	3·85	10
October	26·216	74·5	69·1	66·5	26·131	80·3	76·3	71·4	26·129	71·3	70·2	67·2	79·0	62·4	6-31	7·85	16
November	26·206	72·5	67·6	65·8	26·131	79·5	76·5	69·4	26·129	73·2	69·1	66·6	79·2	62·2	5-53	10·40	16
December	26·206	69·5	66·9	65·1	26·126	79·9	76·5	70·8	26·141	69·7	68·6	66·5	79·7	62·7	4-55	4·93	13
Mean for the Year ...	26·216	72·3	68·6	65·6	26·156	79·8	75·4	69·4	26·165	70·7	69·3	66·3	78·2	62·0	5-18	Totals 89·04	160

Statement of Extra Meteorological Observations taken at Entebbe, for 1923.

MONTH.	Solar Radiation Thermometers.		Terrestrial Radiation Minimum Thermometer	Earth Thermometer 4 feet deep.			Earth Thermometer 1½ feet deep.			Average Hourly Velocity of Wind between the hours of.			Evaporation.
	Black. 2 P.M.	Bright.		7 A.M.	2 P.M.	9 P.M.	7 A.M.	2 P.M.	9 P.M.	9 P.M. TO 7 A.M.	7 A.M. TO 2 P.M.	2 P.M. TO 9 P.M.	
										miles per hour	miles per hour	miles per hour	mms.
JANUARY ...	°142·2	°102·2	°52·7	°75·4	°75·5	°75·5	°77·1	°77·4	°77·3	1·9	3·5	3·8	Observations commenced in June
FEBRUARY ...	132·3	99·8	52·7	75·6	75·6	75·6	75·5	75·6	75·6	1·5	2·2	2·7	
MARCH ...	137·0	98·0	52·8	76·0	76·2	76·2	77·4	77·7	77·6	3·1	3·5	3·5	
APRIL ...	133·5	97·8	54·9	76·0	76·0	76·0	75·9	75·9	76·0	2·5	2·8	3·5	
MAY ...	136·4	97·8	52·3	74·4	74·5	74·4	72·5	72·7	72·7	2·9	3·4	3·0	
JUNE ...	138·6	99·5	50·5	73·7	73·7	73·7	73·9	74·0	74·0	2·3	4·7	3·0	2·8
JULY ...	127·3	92·0	56·1	73·5	73·5	73·5	72·1	72·2	72·0	2·3	3·9	2·3	2·0
AUGUST ...	136·5	96·7	56·5	73·2	73·4	73·2	73·0	73·1	73·1	2·2	4·5	2·7	2·7
SEPTEMBER ...	137·5	98·0	57·5	74·2	74·3	74·2	75·0	75·3	75·5	3·3	5·7	2·7	3·0
OCTOBER ...	141·5	99·8	57·3	75·0	75·3	75·2	76·3	76·7	76·8	4·2	5·0	3·2	3·1
NOVEMBER ...	138·6	98·2	59·4	75·5	75·5	75·4	75·2	75·4	75·9	2·7	4·4	2·8	2·6
DECEMBER ...	139·0	98·6	58·3	75·2	75·2	75·2	75·1	75·5	75·9	2·5	4·5	2·5	2·6
MEAN FOR YEAR	136·7	98·2	55·1	74·8	74·9	74·8	74·9	75·1	75·2	2·6	4·0	3·0	2·7

JINJA Meteorological Statement for the Year 1923.

Lat. 0° 26″ N. Long. 33° 11′ E. Height above M.S.L. 3722 feet.

MONTH.	7 A.M.				2 P.M.				9 P.M.							
	Barometer.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Barometer.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Barometer.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rainfall.	No. of days Rain fell.
	In.	o	o	o	In.	o	o	o	In.	o	o	o	o	o	In.	
JANUARY	26·187	77·8	72·3	68·2	26·121	88·2	84·9	72·0	26·197	71·9	67·8	64·9	89·3	62·2	—	—
FEBRUARY	26·225	73·6	69·7	67·6	26·167	81·3	77·9	70·5	26·224	70·0	66·7	65·0	83·9	63·3	6·19	13
MARCH	26·229	75·2	70·6	68·1	26·145	88·1	79·7	71·4	26·236	70·2	66·8	64·8	85·2	62·7	6·36	11
APRIL	26·271	66·9	67·4	65·9	26·163	78·2	75·1	68·8	26·242	67·4	65·4	63·8	80·8	62·3	6·37	18
MAY	26·232	71·0	70·9	66·1	26·178	73·9	74·4	68·2	26·235	67·5	65·4	64·1	80·5	62·2	9·44	19
JUNE	26·233	72·7	69·2	66·9	26·153	81·0	77·6	69·2	26·229	68·2	66·2	64·9	82·6	63·2	0·91	4
JULY	26·246	68·8	65·9	64·2	26·181	76·3	72·4	66·6	26·237	66·2	64·5	63·2	78·6	61·3	2·76	10
AUGUST	26·235	71·0	66·3	64·9	26·184	80·8	76·7	70·4	26·237	68·3	65·4	63·8	82·9	60·2	2·99	5
SEPTEMBER	26·243	72·0	67·7	65·3	26·163	81·6	78·0	70·2	26·246	68·4	65·8	64·1	84·1	61·6	6·88	8
OCTOBER	26·245	71·3	68·2	65·4	26·183	82·7	79·1	69·2	26·253	68·5	66·6	64·5	84·1	62·7	5·10	12
NOVEMBER	26·246	71·1	68·3	66·7	26·163	81·9	78·2	68·8	26·248	67·7	66·1	64·9	84·2	62·9	3·18	10
DECEMBER	26·239	70·8	67·9	66·0	26·164	81·7	78·5	69·9	26·248	68·1	66·4	65·1	81·4	62·7	5·80	12
MEAN FOR THE YEAR ...	26·236	71·8	68·5	66·4	26·164	81·3	77·7	69·6	26·236	68·5	66·1	64·4	83·1	62·3	TOTALS 55·98	122

Meteorological Statements for the Year 1923.

MUBENDE.

Lat. 0° 30′ 26″ N. Long. 31° 22′ 22″ E. Height above M.S.L. 5121 feet.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	9 P.M. Dry Bulb.	9 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	No. of days rain fell.
	°	°	°	°	°	°	°	°	In.	
JANUARY ...	64·5	62·0	80·0	70·4	65·9	63·1	82·1	61·7	1·02	3
FEBRUARY ...	64·0	61·8	75·5	69·3	65·6	62·8	79·9	60·0	2·46	7
MARCH ...	64·3	62·0	76·5	69·9	66·0	62·7	79·9	60·0	4·06	9
APRIL ...	63·0	60·8	73·6	68·9	64·2	62·0	75·9	59·5	11·10	16
MAY ...	63·1	61·2	74·9	70·0	64·3	62·4	76·9	60·0	9·74	12
JUNE ...	63·6	60·5	76·1	70·2	64·9	62·1	79·3	59·3	2·45	5
JULY ...	62·3	59·4	71·6	68·6	63·2	60·7	74·6	58·3	6·97	13
AUGUST ...	62·0	59·2	74·5	68·4	63·8	60·7	77·3	58·2	1·73	13
SEPTEMBER	62·5	56·8	74·7	68·9	63·3	61·2	77·1	58·9	5·28	16
OCTOBER ...	62·3	59·9	73·0	68·6	64·9	61·6	75·8	58·6	6·76	19
NOVEMBER ...	63·2	60·4	72·7	68·3	65·2	62·1	76·2	59·3	7·03	12
DECEMBER ...	63·5	60·2	75·1	68·1	65·5	61·5	77·1	58·9	4·91	11
MEAN FOR YEAR	63·3	59·9	74·9	69·1	64·7	61·9	79·3	59·4	TOTALS 63·51	136

MASAKA.

Lat. 0° 21′ S. Long. 31° 47′ E. Height above M.S.L. 4150—4250 feet.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	9 P.M. Dry Bulb.	9 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	No. of days rain fell.
	°	°	°	°	°	°	°	°	In.	
JANUARY ...	62·8	61·5	79·4	68·8	66·4	64·4	87·0	51·6	0·55	2
FEBRUARY ...	62·9	61·4	80·5	67·0	66·6	64·6	79·2	51·2	2·42	6
MARCH ...	62·6	61·6	78·0	68·0	67·0	64·2	85·9	51·3	4·95	7
APRIL ...	62·5	61·6	75·8	66·9	66·7	63·7	85·5	51·5	8·84	11
MAY ...	62·6	61·6	73·2	67·8	68·2	65·2	88·7	51·4	5·36	14
JUNE ...	63·2	62·5	74·0	66·2	67·9	65·2	89·1	51·5	0·67	2
JULY ...	61·8	60·8	71·0	64·8	67·3	64·9	89·0	50·3	2·37	9
AUGUST ...	62·9	61·9	73·0	65·3	66·6	64·2	89·2	51·2	0·55	4
SEPTEMBER ...	63·3	62·3	74·2	65·3	65·7	63·6	89·2	51·2	1·17	4
OCTOBER ...	62·7	61·7	74·5	65·8	65·9	63·5	89·2	51·0	3·94	12
NOVEMBER ...	63·0	62·0	73·8	66·0	66·1	63·6	89·4	51·0	5·03	13
DECEMBER ...	62·8	61·8	74·9	66·2	65·6	63·4	89·3	52·8	6·46	11
MEAN FOR YEAR	62·8	61·7	75·2	66·5	66·7	64·2	87·6	51·3	TOTALS 42·31	95

MBARARA.

Lat. 0° 31′ S. Long. 30° 47′ E. Height above M.S.L. 4500 feet.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rain.	No. of days rain fell.
	°	°	°	°	°	°	hrs. mts.	In.	
JANUARY ...	66·5	64·5	82·8	79·5	86·7	67·5	7-48	0·09	1
FEBRUARY ...	66·9	64·3	79·1	73·6	84·5	63·6	6-58	3·06	6
MARCH ...	68·4	66·3	80·7	70·1	86·7	64·7	7-41	1·60	5
APRIL ...	66·2	62·6	74·1	68·7	79·6	59·6	6-33	7·92	12
MAY ...	66·6	63·9	77·2	72·3	82·2	61·3	7-25	2·15	6
JUNE ...	68·1	64·4	77·2	71·5	85·6	63·1	7-44	2·06	3
JULY ...	64·1	62·3	71·1	64·2	82·0	61·6	6-21	2·37	6
AUGUST ...	62·6	61·0	77·3	73·3	83·8	62·3	7-16	0·27	2
SEPTEMBER ...	65·5	63·4	76·6	71·6	86·6	62·2	6-42	5·22	8
OCTOBER ...	64·7	62·9	73·7	68·3	83·5	59·0	6-27	4·91	12
NOVEMBER ...	64·5	62·3	77·4	69·6	80·5	61·9	9-47	3·15	9
DECEMBER ..	64·7	62·9	75·8	69·6	80·5	61·2	7-39	4·32	5
MEAN FOR YEAR ...	65·7	63·4	76·9	71·0	83·5	62·3	7-21	TOTALS 37·12	75

Meteorological Statements for the Year 1923.

FORT PORTAL.

Lat. 0° 43′ N. Long. 30° 8′ E. Height above M.S.L. 5299 feet.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rain.	No. of days rain fell.
	o	o	o	o	o	o	hrs. mts.	In.	
JANUARY ...	57·2	55·2	78·2	70·1	81·2	51·3	3-52	1·29	2
FEBRUARY ...	58·2	56·6	72·8	65·7	80·5	53·5	4-18	0·88	2
MARCH ...	60·2	58·9	74·8	66·9	81·9	51·9	5-21	5·11	11
APRIL ...	60·2	59·4	70·9	66·4	74·0	54·0	3-27	12·24	22
MAY ...	60·4	59·6	72·6	67·2	75·2	54·6	4-35	7·27	20
JUNE ...	59·9	58·3	73·9	68·5	75·9	53·2	5-59	1·40	9
JULY ...	62·4	59·0	69·4	64·2	74·5	39·7	3-40	3·25	16
AUGUST ...	60·5	58·5	72·5	64·6	76·3	39·4	4-48	5·62	13
SEPTEMBER ...	60·0	58·5	73·1	66·9	75·9	40·2	4-12	5·83	14
OCTOBER ...	63·4	60·6	72·2	67·5	78·0	41·6	?	11·22	12
NOVEMBER ...	61·9	60·3	76·4	69·7	77·3	39·6	4-13	5·85	21
DECEMBER ...	60·6	58·9	72·3	66·5	78·4	38·5	5-31	4·13	13
								TOTALS	
MEAN FOR YEAR ...	60·4	58·6	73·3	67·0	77·8	46·5	4-27	64·09	155

KAMPALA.

Lat. 0° 19′ N. Long. 32° 35′ E. Height above M.S.L. 3905 feet.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	No. of days rain fell.
	o	o	o	o	o	o	In.	
JANUARY ...	66·6	64·6	86·3	81·3	89·7	64·1	1·76	3
FEBRUARY ...	66·9	65·1	78·8	75·8	83·4	64·8	2·65	12
MARCH ...	67·5	65·5	82·3	77·5	85·5	63·8	5·25	14
APRIL ...	66·8	64·8	76·2	72·9	79·5	63·9	5·30	13
MAY ...	65·7	64·2	77·2	73·3	78·5	63·1	8·81	17
JUNE ...	65·7	64·3	77·2	73·4	78·3	63·8	3·23	8
JULY ...	64·0	62·8	72·0	69·8	74·8	63·5	6·43	12
AUGUST ...	65·5	63·9	77·2	73·7	79·0	64·7	0·72	4
SEPTEMBER ...	64·9	63·5	77·5	74·2	82·3	63·6	0·69	2
OCTOBER ...	64·9	63·9	81·2	76·7	84·7	63·8	3·53	11
NOVEMBER ...	65·0	64·0	80·0	74·7	86·2	63·5	6·22	9
DECEMBER ...	65·2	64·2	81·2	75·1	86·0	63·7	4·73	9
							TOTALS	
MEAN FOR YEAR ...	65·7	64·2	78·9	74·9	82·3	63·9	49·32	114

GULU.

Lat. 2° 45′ N. Long. 32° 25′ E. Height above M.S.L. 3700 feet approx.

MONTH.	7 A.M. Dry Bulb.	7 A.M. Wet Bulb.	2 P.M. Dry Bulb.	2 P.M. Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	No of days rain fell.
		o	o	o	o	o	In.	
JANUARY ...	74·4	64·4	90·3	71·6	95·3	70·9	—	—
FEBRUARY ...	70·7	63·3	85·7	71·2	97·2	70·7	0·81	5
MARCH ...	73·4	66·3	82·7	70·8	98·4	69·1	4·18	13
APRIL ...	69·9	67·0	77·7	70·7	106·1	68·3	6·02	17
MAY ...	70·4	67·6	76·6	70·4	108·8	66·7	6·21	17
JUNE ...	70·3	66·7	76·7	70·1	No records		3·38	12
JULY ...	66·4	64·0	73·9	68·3	75·0	62·2	11·45	25
AUGUST ...	68·4	65·3	75·6	69·3	77·2	62·4	8·24	20
SEPTEMBER ...	70·1	66·8	75·1	69·1	77·2	63·1	10·43	17
OCTOBER ...	69·2	65·3	79·1	70·2	80·2	63·3	6·23	20
NOVEMBER ...	70·1	67·1	80·2	70·2	83·9	64·5	2·60	12
DECEMBER ...	72·2	66·5	82·2	69·7	84·7	64·7	2·66	7
							TOTALS	
MEAN FOR YEAR ...	70·5	65·9	79·6	70·1	89·5	66·0	62·21	165

Meteorological Statements for the Year 1923.—*continued.*

BUKALASA.

Lat. 0° 43′ N. Long. 32° 30′ E. Height above M.S.L. 3700 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell.
	o	o	Ins.	
JANUARY ...	89·5	62·2	1·02	5
FEBRUARY	85·0	64·1	4·56	16
MARCH ...	87·7	63·8	5·68	15
APRIL ...	82·0	63·5	8·69	21
MAY ...	80·9	63·4	6·79	18
JUNE ...	83·2	62·1	3·51	9
JULY ...	78·1	61·0	9·45	23
AUGUST ...	81·5	59·3	2·19	9
SEPTEMBER	82·8	61·0	5·30	13
OCTOBER ...	84·1	62·5	7·76	19
NOVEMBER	85·3	62·4	4·26	12
DECEMBER	88·5	61·3	2·56	7
MEAN FOR THE YEAR	84·0	62·4	TOTALS. 61·67	167

SERERE.

Lat. 1° 31′ N. Long. 33° 27′ E. Height above M.S.L. 3600 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell.
	o	o	Ins.	
JANUARY...	92·2	66·8	0·32	3
FEBRUARY	85·1	65·8	2·85	6
MARCH ...	88·3	68·2	6·77	11
APRIL ...	80·9	65·2	8·86	17
MAY ...	80·1	65·2	9·02	16
JUNE ...	80·8	64·4	3·57	14
JULY ...	77·0	62·8	9·11	20
AUGUST ...	81·0	63·6	7·17	15
SEPTEMBER	83·7	63·8	8·41	16
OCTOBER...	83·3	63·7	6·96	20
NOVEMBER	86·7	64·1	1·50	7
DECEMBER	87·0	64·1	1·68	8
MEAN FOR YEAR	83·9	64·8	TOTALS. 66·22	153

MASINDI.

Lat 1° 40′ N. Long. 31° 50′ E. Height above M.S.L. 3764 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rain.	No. of days rain fell.
	o	o	Hrs.	Ins.	
JANUARY ...	91·2	51·1	8-50	—	—
FEBRUARY	88·0	52·0	6-07	3·39	6
MARCH ...	89·0	53·1	7-28	3·36	10
APRIL ...	83·9	61·7	4-38	7·32	15
MAY ...	83·6	62·1	5-49	5·59	10
JUNE ...	86·1	62·0	7-36	2·70	6
JULY ..	79·9	61·8	3-10	4·97	16
AUGUST ...	82·1	60·4	6-54	2·44	12
SEPTEMBER	82·6	60·1	8-52	7·74	15
OCTOBER ...	82·1	61·4	4-48	10·89	18
NOVEMBER	83·0	62·1	7-15	2·62	12
DECEMBER	84·6	61·8	9-49	1·99	7
MEAN FOR YEAR	84·7	59·1	6-58	TOTALS. 53·01	127

SIMSA.

Lat. 1° 43′ N. Long. 33° 37′ E. Height above M.S.L. 3600 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell.
	o	o	Ins.	
JANUARY	99·6	66·2	—	—
FEBRUARY	91·3	67·7	2·94	9
MARCH ...	94·6	68·0	3·98	9
APRIL ...	80·8	62·7	6·15	15
MAY ...	84·2	66·5	8·70	12
JUNE ...	86·1	65·5	5·55	12
JULY ...	81·2	64·8	8·68	21
AUGUST ...	86·7	64·2	4·17	14
SEPTEMBER	90·2	64·5	9·29	18
OCTOBER...	90·2	65·0	4·63	15
NOVEMBER	90·2	65·0	2·67	6
DECEMBER	93·2	64·1	0·50	4
MEAN FOR YEAR	89·0	65·4	TOTALS. 57·26	135

ARUA.

Lat. 3° N. Long. 31° E. Height above M.S.L. 6200 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell
	o	o	Ins.	
JANUARY ...	83·8	63·7	—	—
FEBRUARY	81·8	61·5	4·15	5
MARCH ...	85·8	52·6	1·95	11
APRIL ...	75·7	51·8	3·50	10
MAY ...	76·5	49·6	7·98	14
JUNE ...	77·1	47·4	4·19	5
JULY ..	74·6	48·0	7·86	17
AUGUST ...	72·3	49·6	5·26	8
SEPTEMBER	71·9	49·9	7·60	16
OCTOBER ...	69·8	52·7	7·70	21
NOVEMBER	80·8	51·3	3·88	12
DECEMBER	80·7	50·4	4·34	11
MEAN FOR YEAR	79·3	52·4	TOTALS 58·41	130

NAGICHOT.

Lat. 4° 37′ N. Long. 33° 32′ E. Height above M.S L. 6300 feet.

MONTH.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell
	o	o	Ins.	
JANUARY ...	75·9	61·4	—	—
FEBRUARY	73·1	59·7	1·84	6
MARCH ...	74·4	60·6	2·21	6
APRIL ...	69·7	58·7	6·61	14
MAY ...	67·7	57·7	8·91	20
JUNE ...	67·5	57·0	8·57	14
JULY ...	64·7	55·5	12·74	26
AUGUST ...	67·6	55·5	4·17	12
SEPTEMBER	69·6	56·3	0·98	4
OCTOBER ...	69·7	57·5	2·80	9
NOVEMBER	70·7	57·3	1·84	5
DECEMBER	72·2	58·2	0·86	5
MEAN FOR YEAR	70·5	58·2	TOTALS 50·53	121

Meteorological Statements for the Year 1923.—*continued.*

BOMBO.

Lat. 0° 34′ 30″ N. Long. 32° 32′ E. Height above M.S.L. 4040 feet.

MONTH.	7 A.M.						
	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine.	Rain.	No. of days rain fell.
	°	°	°	°	Hrs.	Ins.	
JANUARY	71·2	65·8	86·7	62·1	6-14	0·48	3
FEBRUARY	68·8	65·0	81·4	63·2	3-31	5·83	11
MARCH	71·6	66·5	84·0	63·0	6-59	4·20	13
APRIL	69·0	66·6	78·7	62·8	3-53	6·96	19
MAY	69·6	66·7	78·7	62·7	5-38	9·26	19
JUNE	69·8	66·7	80·4	61·8	7-00	2·62	12
JULY	66·3	64·3	76·4	61·4	3-10	3·16	14
AUGUST	68·0	64·7	79·8	60·7	6-41	2·11	11
SEPTEMBER	69·8	65·8	81·2	61·3	5-58	3·52	12
OCTOBER	70·4	65·7	80·1	62·4	6-22	6·17	22
NOVEMBER	70·7	66·5	80·6	62·4	6-43	4·34	16
DECEMBER	70·2	66·4	81·6	62·2	6-11	3·89	11
MEAN FOR YEAR	69·6	65·9	80·9	62·2	5-46	TOTALS 52·54	163

MBALE.

Lat 1° 2′ N. Long. 43° 6′ E. Height above M.S.L. 4000 feet approx.

MONTH.	7 A.M.		2 P.M.					
	Dry Bulb	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	Number of days rain fell.
	°	°	°	°	°	°	Ins.	
JANUARY ...							0·31	1
FEBRUARY ...							4·97	8
MARCH ...		No records					2·48	4
APRIL ...							12·39	17
MAY ...							11·76	16
JUNE ...	*66·1	*63·0	*76·6	*67·0	*81·5	*61·7	6·31	7
JULY ...	65·4	63·4	74·3	66·7	77·6	62·4	3·74	21
AUGUST	64·5	61·8	75·5	66·7	79·4	60·5	5·70	18
SEPTEMBER ...	64·4	62·4	76·2	67·1	80·5	60·8	4·40	11
OCTOBER ...	66·2	63·2	76·0	67·2	80·2	61·7	4·57	17
NOVEMBER ...	65·6	62·7	78·3	67·5	81·4	61·3	0·94	10
DECEMBER ...	65·3	62·4	80·3	67·3	82·9	61·2	1·13	7
MEAN FOR 7 MONTHS	65·4	62·7	76·8	67·1	80·5	61·4	TOTALS 58·46	137

*Records for 9 days only.

TORORO.

Lat. 0° 40′ N. Long. 34° 20′ E. Height above M.S.L. (Not known).

MONTH.	7 A.M.		2 P.M.		9 P.M.					
	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Rain.	No. of days rain fell.
	°	°	°	°	°	°	°	°	Ins.	
JANUARY ...										
FEBRUARY ...										
MARCH ...										
APRIL ...				Observations started in August only						
MAY ...										
JUNE ...										
JULY ...										
AUGUST ...	69·7	65·6	74·9	68·9	69·9	64·2	78·3	64·7	3·73	10
SEPTEMBER ...	68·4	64·9	73·9	68·8	69·1	64·8	77·5	63·5	5·28	7
OCTOBER ...	68·9	66·2	73·9	69·1	69·9	64·6	78·1	63·8	5·95	9
NOVEMBER ...	69·1	67·1	73·1	69·5	68·5	64·5	77·4	68·7	3·05	3
DECEMBER ...	69·5	67·4	72·3	69·2	67·7	64·5	76·0	67·2	2·75	4
MEAN FOR 5 MONTHS	69·1	66·2	73·6	69·1	69·0	64·5	77·5	65·6	TOTALS 20·76	33

Comparative Rainfall Statement, showing the Monthly Rainfall for the Year 1923, of Fifty-four Localities of the Uganda Protectorate.

MONTH	Arua.		Bombo.		Budo.		Bugondo.		Bukalasa.		Bukumi.		Bunyaruguru.		Butiaba.		Butiti.		Buye.		Bwavu.		Entebbe.		Fort Portal.		Gulu.	
	In.	No. of days.	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY	Nil	...	·48	3	0·36	2	Nil	...	1·02	5	Nil	...	1·90	3	0·03	1	1·58	3	Nil	...	0·60	3	0·24	3	1·29	2	Nil	...
FEBRUARY	4·15	5	5·83	11	4·84	12	3·34	8	4·56	16	0·92	3	1·26	6	0·59	3	1·05	3	2·35	9	7·65	9	4·46	9	0·88	2	0·81	5
MARCH	1·95	11	4·20	13	5·23	12	6·97	10	5·68	15	5·31	11	...	...	2·11	6	3·33	8	4·26	8	5·96	10	9·81	10	5·11	11	4·18	13
APRIL	3·50	10	6·96	19	4·61	16	4·67	12	8·69	21	8·23	18	...	...	2·59	12	10·60	16	...	...	6·53	21	9·90	21	12·24	22	6·02	17
MAY	7·98	14	9·26	19	10·85	19	8·59	15	6·79	18	7·85	14	...	...	9·21	17	10·22	18	...	...	13·23	22	24·80	20	7·27	20	6·21	17
JUNE	4·19	5	2·62	12	1·02	7	3·67	13	3·51	9	1·67	3	...	...	4·04	4	1·85	6	...	...	2·24	10	3·99	11	1·40	9	3·38	12
JULY	7·86	17	3·16	14	3·41	14	7·41	16	9·45	23	2·96	8	...	...	6·34	16	4·94	12	...	...	7·46	18	5·50	19	3·25	16	11·45	25
AUGUST	5·26	8	2·11	11	4·09	6	3·98	13	2·19	9	3·77	6	...	...	2·81	11	2·78	9	...	...	3·06	12	3·31	12	5·62	13	4·24	20
SEPTEMBER	7·60	16	3·52	12	2·55	12	4·06	16	5·30	13	7·21	18	...	...	3·41	4	4·39	10	...	...	2·52	10	3·85	10	5·83	14	10·43	17
OCTOBER	7·70	21	6·17	22	4·23	10	6·89	21	7·78	19	6·64	23	...	...	7·35	14	10·94	13	...	...	3·94	20	7·85	16	11·22	12	6·23	20
NOVEMBER	3·88	12	4·34	16	4·43	13	1·26	5	4·26	12	3·54	10	...	...	1·65	6	No record		...	...	3·05	12	10·40	16	5·85	21	2·60	12
DECEMBER	4·34	11	3·89	11	2·63	14	0·69	2	2·56	7	4·38	9	...	...	2·41	5	do		...	...	3·85	17	4·93	13	4·13	13	2·66	7
TOTAL	58·41	130	52·54	163	48·25	137	51·53	131	61·78	167	52·48	123	3·16	9	42·54	99	51·68	98	6·61	17	60·09	164	89·04	160	64·09	155	62·21	165

MONTH	Hoima		Hoima River.		Jinja.		Kabale.		Kakamari.		Kakumiro.		Kampala.		Katigondo.		Kewezike.		Kisubi.		Kitgum.		Kivuvu.		Kilclooney.		Lalli Port.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY	0·07	2	Nil	...	Nil	...	0·71	5	Nil	...	0·48	3	1·76	3	0·34	1	0·41	2	0·45	2	Nil	...	0·37	2	1·21	4	Nil	...
FEBRUARY	3·18	5	2·06	7	6·19	13	4·14	10	1·89	8	2·20	9	2·65	12	2·25	8	4·31	9	4·88	8	1·10	3	4·07	13	2·57	9	1·57	4
MARCH	4·35	10	3·48	8	6·36	11	4·28	12	1·14	4	5·47	14	5·25	14	3·58	8	3·03	5	9·71	7	3·96	6	8·14	10	2·27	13	4·20	5
APRIL	8·51	18	5·49½	19	6·37	18	4·46	17	5·43	13	10·39	22	5·30	13	5·32	11	7·66	15	4·36	8	3·67	7	10·50	16	15·95	29	5·39	7
MAY	8·26	22	6·95	17	9·44	19	4·51	15	5·89	11	4·66	17	8·81	17	6·02	16	6·70	13	14·22	12	8·25	16	8·88	19	10·74	25	8·39	11
JUNE	3·85	11	4·21	9	0·91	4	0·07	1	2·86	9	2·46	6	3·23	8	1·12	4	2·19	4	2·39	5	4·25	10	4·07	9	2·38	10	2·08	6
JULY	5·08	12	9·45	19	2·76	10	2·28	8	7·21	22	4·09	16	6·43	12	1·51	6	3·55	8	7·91	12	11·59	15	2·89	11	5·46	20	10·38	16
AUGUST	2·50	11	5·34	15	2·99	5	0·33	1	1·97	6	2·79	11	0·72	4	1·02	5	3·19	6	1·99	5	5·76	13	2·56	6	3·58	11	6·60	11
SEPTEMBER	7·70	18	7·52	21	6·88	8	5·31	10	0·93	3	7·92	20	0·69	2	2·51	5	1·80	8	3·74	8	5·54	12	5·45	9	6·25	14	6·72	11
OCTOBER	7·05	23	7·26	21	5·10	12	2·30	5	2·10	5	5·66	24	3·53	11	7·24	10	5·11	10	4·32	7	5·15	5	5·57	10	11·45	26	5·75	10
NOVEMBER	5·75	14	3·97	12	3·18	10	3·27	7	0·10	2	5·99	17	6·22	9	5·87	11	5·60	11	8·83	11	3·61	4	6·61	8	7·80	23	2·16	7
DECEMBER	3·63	9	4·37	12	5·80	12	3·60	7	Nil	...	6·07	14	4·73	9	4·74	9	5·08	9	4·27	9	2·18	6	2·48	5	5·58	16	1·41	4
TOTAL	59·93	155	60·10½	160	55·98	122	35·26	98	29·52	83	58·18	173	49·32	114	41·52	94	48·63	100	67·07	94	54·06	97	61·59	115	75·74	200	54·64	92

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1923, OF FIFTY-FOUR LOCALITIES OF THE UGANDA PROTECTORATE—*continued.*

MONTH	Lira.		Magigye.		Mairye.		Masaka.		Masindi.		Masindi Port.		Mbale.		Mbarara.		Moniko.		Moroto.		Mubende.		Mulange.		Mutai.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days
JANUARY ...	0·18	1	Nil	...	1·34	3	0·55	2	Nil	...	Nil	...	0·07	1	0·09	1	1·00	2	...	...	1·02	3	1·00	2	0·23	1
FEBRUARY ...	4·19	4	6·86	11	4·28	7	2·42	6	3·39	6	2·15	6	4·97	8	3·06	6	5·03	10	...	...	2·46	7	5·87	11	6·07	6
MARCH ...	3·44	5	3·09	6	6·51	4	4·95	7	3·36	10	3·65	8	2·48	4	1·60	5	4·22	6	...	...	4·06	9	12·76	11	4·25	7
APRIL ...	6·47	13	9·98	19	5·32	9	8·84	11	7·32	15	8·50	16	12·39	17	7·92	12	6·33	14	2·74	7	11·10	16	9·97	14	5·76	9
MAY ...	9·36	16	10·46	11	7·94	14	5·36	14	5·59	10	6·64	11	11·76	16	2·15	6	9·91	15	5·62	16	9·74	12	13·69	12	5·77	9
JUNE ...	2·88	9	2·66	8	0·42	1	0·67	2	2·70	6	3·43	11	6·31	7	2·06	3	3·65	7	3·29	6	2·45	5	6·97	8	...	...
JULY ...	5·34	14	3·12	5	4·57	8	2·37	9	4·97	16	4·02	8	3·74	21	2·37	6	3·41	7	6·79	14	6·97	13	7·22	8	...	...
AUGUST ...	9·03	14	3·45	9	3·90	5	0·55	4	2·44	12	4·31	11	5·70	18	0·27	2	3·81	5	1·34	7	1·73	13	2·06	4	...	...
SEPTEMBER ...	7·02	12	1·49	8	1·37	3	1·17	4	7·74	15	4·54	10	4·40	11	5·22	8	4·07	8	2·21	4	5·28	16	1·24	4	...	...
OCTOBER ..	9·54	19	3·35	7	4·00	6	3·94	12	10·89	18	8·32	16	4·57	17	4·91	12	5·04	14	2·28	4	6·76	19	4·66	8	...	...
NOVEMBER ...	3·89	6	5·32	11	3·68	7	5·03	13	2·62	12	3·41	11	0·94	10	3·15	9	7·11	9	Nil	...	7·03	12	5·25	4	...	...
DECEMBER ...	0·95	6	2·66	4	3·03	6	6·46	11	1·99	7	0·96	4	1·13	7	4·32	5	3·39	9	Nil	...	4·91	11	5·13	7	...	...
TOTAL ...	62·29	119	52·44	86	46·36	73	42·31	95	53·01	127	49·93	112	58·46	137	37·12	75	56·97	106	24·27	58	63·51	136	75·82	93	22·08	32

MONTH	Nagichot.		Nagoje.		Namasagali.		Namukekere.		Nandere.		Ngora.		Nsambya.		Nyondo.		Rubaga.		Serere.		Simsa.		Sozi.		Tororo.	
	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In.	No. of days	In	No. of days	In.	No. of days
JANUARY ...	Nil	...	...	...	0·71	1	0·17	...	0·10	1	Nil	...	0·90	2	0·14	1	0·64	1	0·32	3	Nil	...	...	...	...	...
FEBRUARY ...	1·84	6	...	...	3·84	13	2·30	3	6·14	6	1·31	4	5·13	16	8·04	13	3·30	8	2·85	6	2·94	9	...	...	...	...
MARCH ...	2·21	6	...	..	8·34	15	11·63	15	4·62	7	10·06	9	6·65	11	2·93	9	6·58	8	6·77	11	3·98	9	...	...	...	...
APRIL ...	6·61	14	7·72	12	10·44	20	6·87	19	5·68	11	6·31	11	6·10	16	9·47	24	4·95	10	8·86	17	6·15	15	11·63	30	...	...
MAY ...	8·91	20	12·80	23	5·42	12	12·28	14	5·07	12	9·06	13	11·61	20	4·68	19	15·01	17	9·02	16	8·70	12	14·98	31	...	...
JUNE ...	8·57	14	6·01	6	5·36	10	2·20	7	2·76	4	4·53	8	2·63	4	5·10	13	2·30	3	3·57	14	5·55	12	4·47	21	...	...
JULY ...	12·74	26	4·48	6	3·84	8	8·00	15	6·26	15	7·96	15	6·87	15	5·75	11	5·00	6	9·11	20	8·68	21	7·62	27	...	...
AUGUST ...	No records		4·90	6	5·15	6	1·47	5	2·55	5	3·37	10	0·21	1	5·05	12	0·75	1	7·17	15	4·17	14	7·14	12	3·73	10
SEPTEMBER ...	0·98	4	3·27	5	4·08	13	3·45	13	2·65	6	7·39	10	5·66	9	2·17	11	3·60	4	8·41	16	9·29	18	2·49	8	5·28	7
OCTOBER ...	2·80	9	3·43	8	11·78	16	11·09	19	7·17	12	6·01	11	2·75	16	3·99	13	3·70	4	6·96	20	4·63	15	7·59	16	5·95	9
NOVEMBER ...	1·84	5	3·09	7	7·12	8	4·63	6	4·01	7	2·68	8	7·07	14	1·48	6	5·60	9	1·50	7	2·67	6	8·17	18	3·05	3
DECEMBER ...	0·86	5	3·08	9	3·08	3	1·51	5	4·05	5	1·27	4	5·26	8	2·64	9	4·22	3	1·68	8	0·50	4	9·68	18	2·75	4
TOTAL ...	46·36	109	48·78	82	69·16	125	65·60	121	51·06	91	59·95	103	60·84	132	51·44	141	55·65	74	66·22	153	57·26	135	73·77	181	20·76	33

Statement showing the Situations, Positions and Heights of the Meteorological Stations of Uganda.

Station.	*Province.*	*Latitude.*	*Longitude.*	*Latitude in feet above Mean Sea Level.*
Arua	Northern	3°N.	31°E.	4200
Bombo	Buganda	0°34′30″N.	32°32′ E.	4040
Budo	,,	0°16′ N.	32°29′ E.	4200—4300
Bugondo	Eastern	1°37′ N.	32°17′ E.	3500
Bukalasa	Buganda	0°43′ N.	32°30′ E.	3700
Bukumi	,,	0°49′ N.	31°32′ E.	4200
Bunyaruguru	Western	0°14′ S.	30°00′ E.	3200
Butiaba	Northern	1°50′ N.	31°26′ E.	2025
Butiti	Western	0°39′ N.	30°32′ E.	—
Buye	Buganda	0°12′ N.	32°00′ E.	4270
Bwavu	,,	0°21′ N.	33° 1′ E.	4200 (Approx.)
Entebbe	,,	0°4′31″ N.	32°28′ 30″ E.	3842
Fort Portal	Western	0°43′ N.	30° 8′ E.	5299
Gulu	Northern	2°45′ N.	32°25′ E.	3700 (Approx.)
Hoima	,,	1°30′ N.	31°30′ E.	3801
Hoima River	,,	1°30′ N.	31°21′ E.	4000
Jinja	Eastern	0°26′ N.	33°11′ E.	3722
Kabale	Western	1°15′ S.	29°59′ 28″ E.	6400 (Approx.)
Kakamari	Eastern	3°23′ N.	34° 6′ E.	5000 ,,
Kakumiro	Buganda	0°46′ N.	31°18′ E.	4511
Kampala	,,	0°19′ N.	32°35′ E.	3905
Katigondo	,,	0°13′ S.	31°44′ E.	4290
Kewezike	,,	—	—	—
Kilclooney	Western	0°30′ N.	30°20′ E.	4980
Kitgum	Eastern	3°20′ N.	32°55′ E.	—
Kisubi	Buganda	0°10′ N.	32°33′ E.	3850
Kivuvu	,,	0°23′ N.	32°47′ E	3600—3700
Lalli Port	Eastern	1°42′ N.	33°28′ E.	—
Lira	,,	2°15′ N.	32°55′ E.	—
Magigye	Buganda	0°29′ N.	32°36′ E.	3900
Mairye	,,	0°32′ N.	32°40′ E.	3500
Masaka	,,	0°21′ S.	31°47′ E.	4150—4250
Masindi	Northern	1°40′ N.	31°50′ E.	3764
Masindi Port	,,	1°42′ N.	32° 5′ E.	3360
Moniko	Buganda	0°23′ N.	32°55′ E.	4100
Moroto	Eastern	2°35′ N.	34°30′ E.	5000
Mubende	Buganda	0°30′26″N.	31°22′ 22″ E.	5121
Mulange	,,	0°31′ N.	33° 3′ E.	4253
Mutai	Eastern	0°34′ N.	33°14′ E.	3600
Mbale	,,	1° 2′ N.	43° 6′ E.	4000 (Approx.)
Mbarara	Western	0°31′ S.	30°47′ E.	4500
Nagichot	Sudan	4°17′ N.	33°32′ E.	6300
Nagoje	Buganda	0°27′ N.	32°53′ E.	3785
Namasagali	Eastern	1°0′ N.	32°57′ E.	3400
Namukekera	Buganda	0°41′ N.	32°14′ E.	3700
Nandere	,,	0°38′ N.	32°30′ E.	3900
Ngora	Eastern	1°28′ N.	33°48′ E.	3700
Nsambya	Buganda	0°18′ N.	32°34′ E.	4020
Nyondo	Eastern	1° 1′ N.	34°14′ E.	—
Rubaga	Buganda	0°18′ N.	32°33′ E.	4135
Serere	Eastern	1°31′ N.	32°27′ E.	3600
Simsa (Soroti)	,,	1°43′ N.	33°37′ E.	3690
Sozi (Sese)	Buganda	—	—	—
Tororo	Eastern	0°40 N.	34°10′ E.	—